Chemical Week

March 27, 1954

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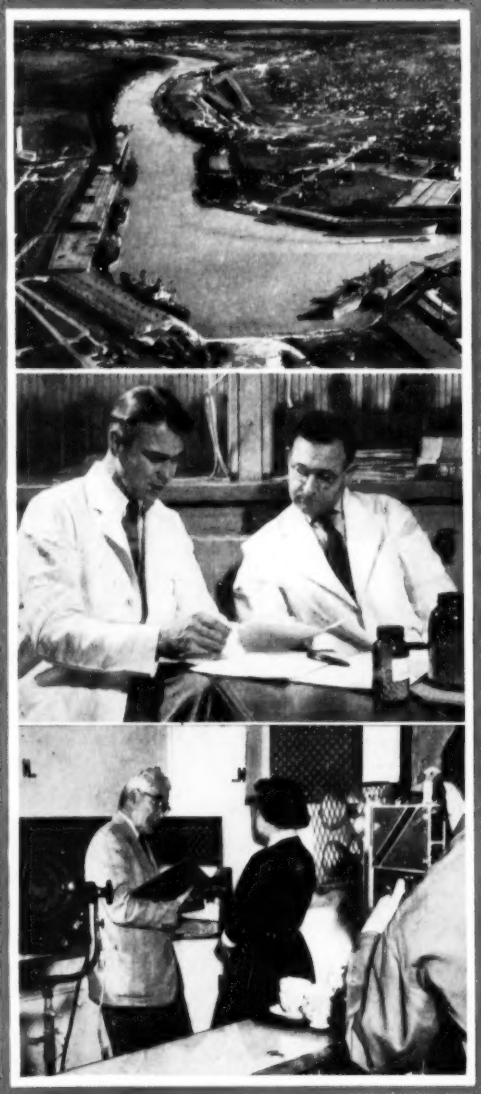

Industry sizes up today's legion of practical opportunities for atomic developments . . . . p. 16

Boom along the Channel: 20 miles of plants makes Houston chemical kingpin . . . . . p. 20

Researchers Stock and Clarke: Their new antibiotic moves from mice-to-men stage . . . . . p. 60

How's your business, what's your opinion on outlook? Check it against the consensus . . . p. 90

TV time "for free;" Company movies now star as sales promoters . p. 97

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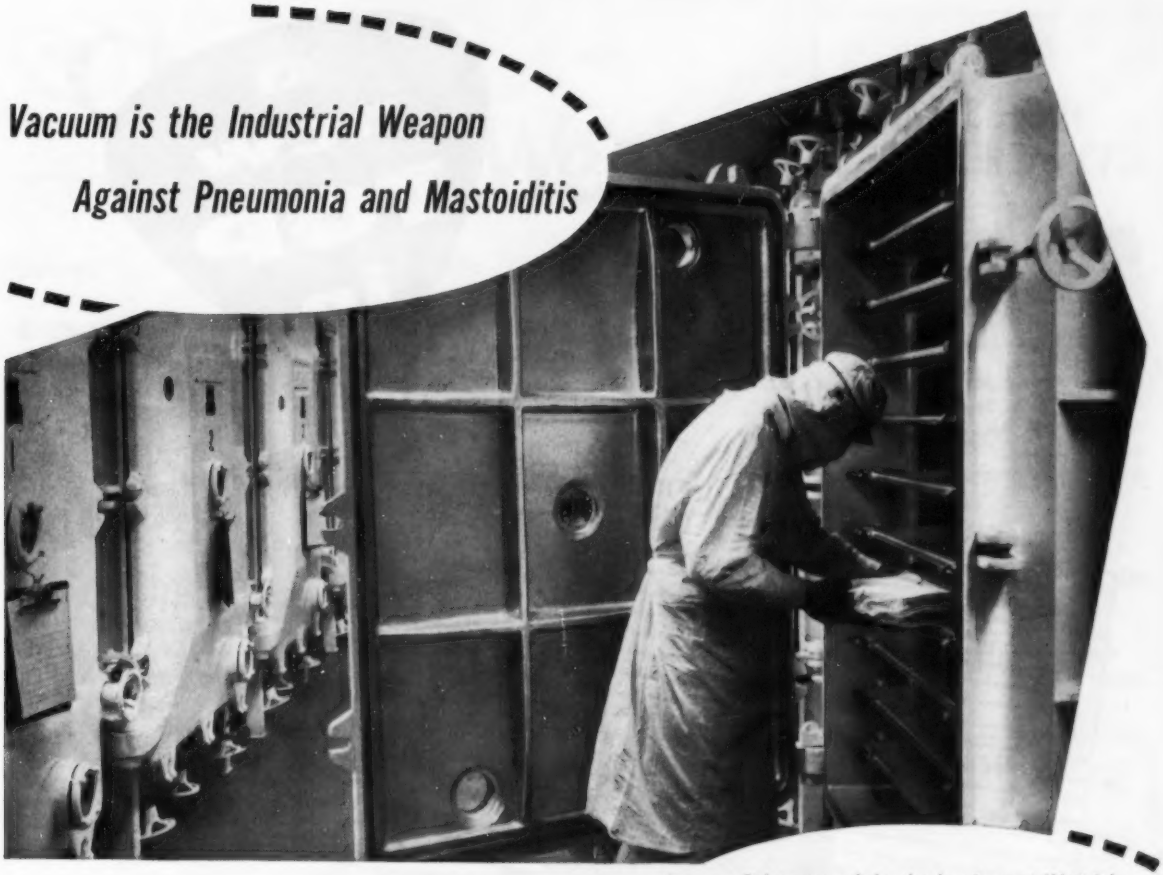

Stokes vacuum drying chambers in use at Abbott Laboratories, North Chicago, Ill., for the drying of crystalline penicillin and other antibiotics. Picture is taken through window of sterile drying room. Operator is masked and gloved to maintain sterile conditions.

Remember when these were dreaded afflictions? Now mastoid troubles are a rarity and pneumonia is no longer a dreaded killer, thanks to penicillin. Penicillin, dried in Stokes vacuum chambers at Abbott Laboratories, North Chicago, Ill., is one of many pharmaceuticals which must be dried under vacuum because only under vacuum are the destructive effects of air and heat avoided.

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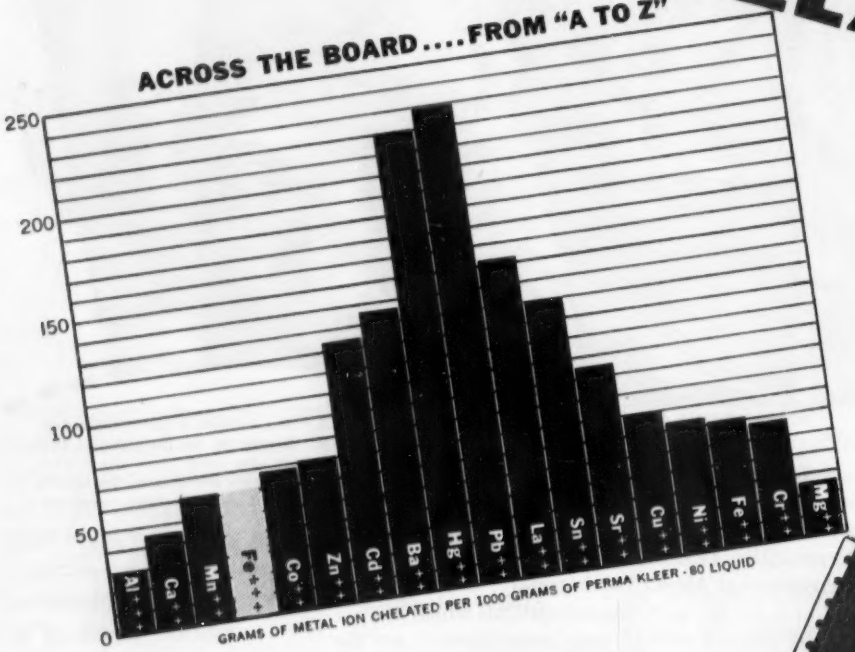

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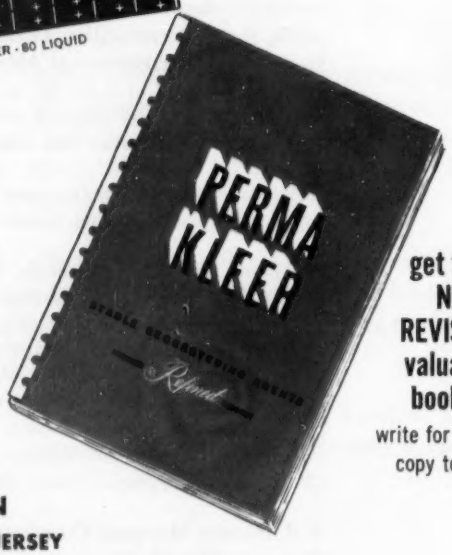

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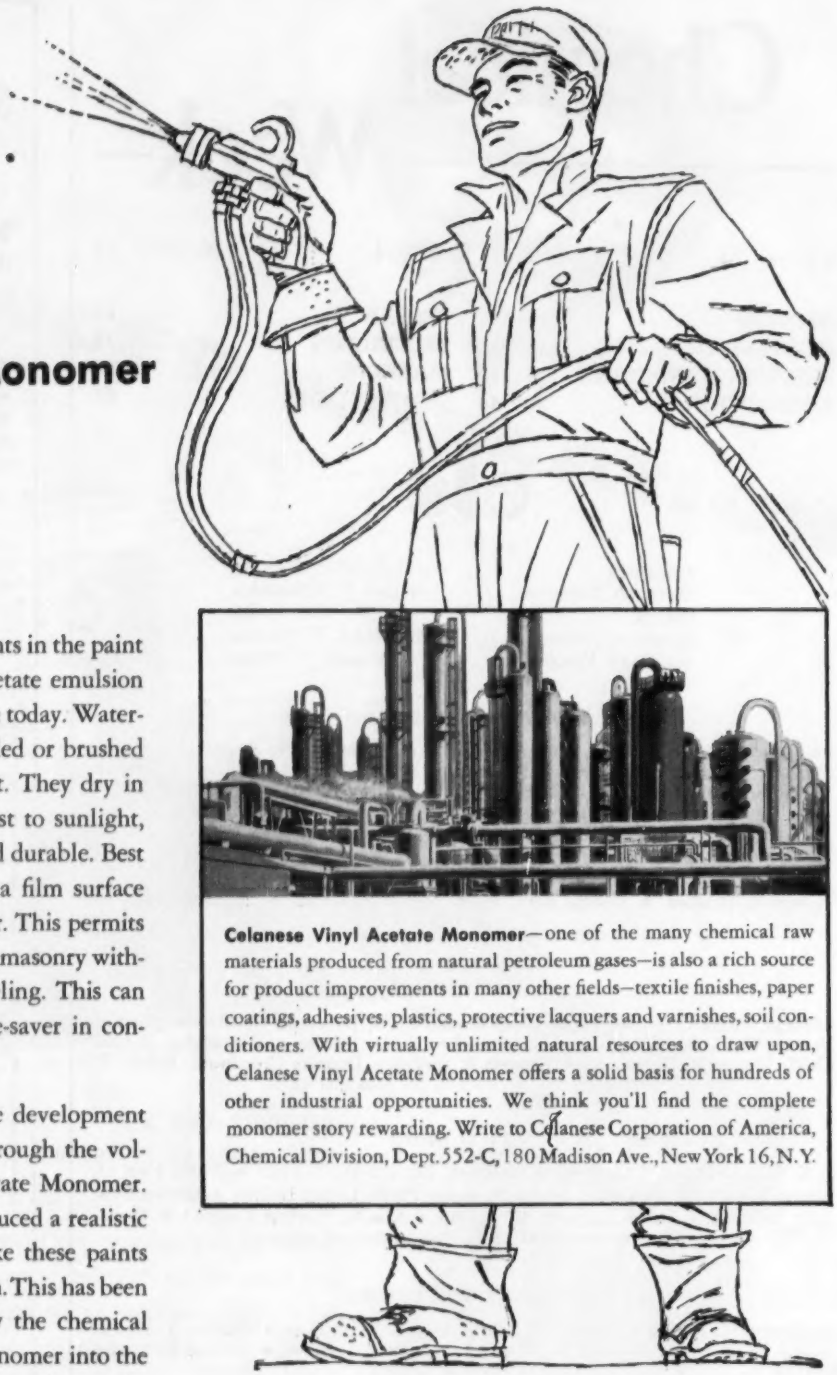
New Paints

that "breathe"...

from Celanese*

Vinyl Acetate Monomer



Of the many recent developments in the paint industry, the new polyvinyl acetate emulsion paints offer the greatest promise today. Water-based, they can be sprayed, rolled or brushed on any surface—indoors or out. They dry in less than an hour. They are fast to sunlight, alkali and weather resistant, and durable. Best of all, these new paints form a film surface that is porous to moisture-vapor. This permits application on fresh plaster and masonry without danger of blistering or peeling. This can prove to be a tremendous time-saver in construction and maintenance.

Celanese is contributing to the development of polyvinyl acetate paints, through the volume production of Vinyl Acetate Monomer. Celanese production has introduced a realistic price stability that should make these paints competitive in every application. This has been a spur to increased activity by the chemical companies who process the Monomer into the polyvinyl acetate resin emulsions for use by paint manufacturers.

Celanese Vinyl Acetate Monomer—one of the many chemical raw materials produced from natural petroleum gases—is also a rich source for product improvements in many other fields—textile finishes, paper coatings, adhesives, plastics, protective lacquers and varnishes, soil conditioners. With virtually unlimited natural resources to draw upon, Celanese Vinyl Acetate Monomer offers a solid basis for hundreds of other industrial opportunities. We think you'll find the complete monomer story rewarding. Write to Celanese Corporation of America, Chemical Division, Dept. 552-C, 180 Madison Ave., New York 16, N.Y.

Celanese* CHEMICALS

*Reg. U.S. Pat. Off.

Here are three polyvinyl acetate emulsions especially developed for paints. Paint manufacturers will do well to investigate these three products. They can mean new sales and profits. All three manufacturers have excellent technical service laboratories.

VINAC XX

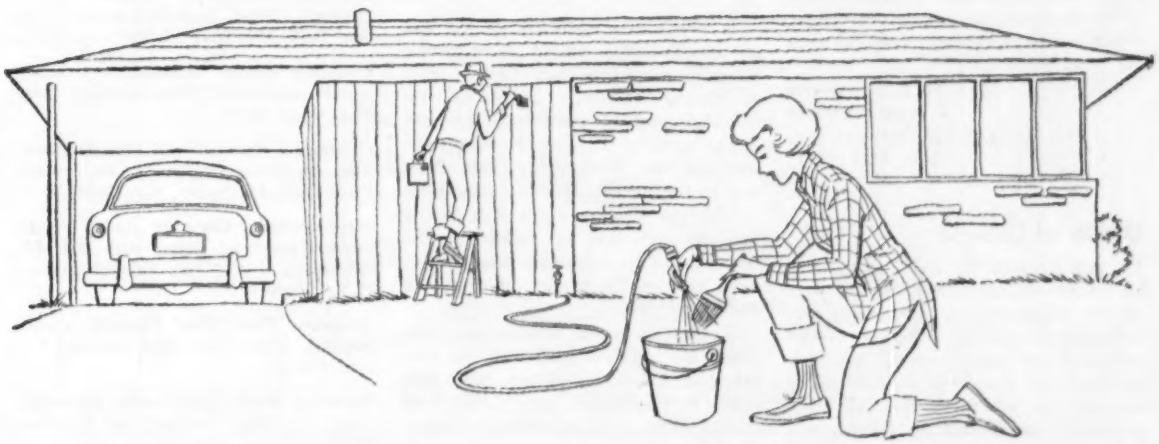
by The Colton Chemical Company
1545 East 18th Street, Cleveland, Ohio

EVERFLEX G

by Dewey & Almy Chemical Company
Cambridge 40, Massachusetts

POLYCO 522

by American Polymer Company
The Borden Company, Chemical Division
Peabody, Massachusetts



Water base outdoor paints+the home building boom+the do-it-yourself movement+increased color style consciousness add up to A Great New Market for Paint Manufacturers

OPINION . . . . . .

Chemicals in Water

TO THE EDITOR: I was very much interested in your news article on water treatment (*Feb. 6*) especially since we are so vitally concerned with that industry . . .

We read your magazine regularly here . . . it's the only one of about two dozen different magazines that we receive that I really use . . .

J. A. HOLMES
Vice-President
National Aluminate Corp.
Chicago.

Full and Fair

TO THE EDITOR: We would just like to compliment CW on the fine news article on cresylic acid (*Mar. 6*). Within the space at your disposal you have given a full and fair account of the present cresylic acid situation. . . .

Our only further comment . . . concerns the paragraph which mentions Midland Tar Distillers' new plant as having a rated capacity of one million gallons per year. We realize the writer meant the million gallons to apply only to the A.D.F. acids . . . but perhaps, to a casual reader, this is not clear. . . . Our capacity for A.D.F. type acids is 1,000,000 imperial gallons (1,200,000 U. S. gallons) per year . . . our over-all capacity for all cresylic acids is 4-5 times larger than the A.D.F. capacity alone.

We find your magazine very interesting and informative. Keep on with the good work. . . .

H. E. SOUTHERN
Vice President
The Midland Tar Distillers, Inc.
New York, N. Y.

Union of Unions

TO THE EDITOR: In order that there be no misunderstanding on the part of our employers . . . regarding the collective bargaining intentions of the proposed Oil and Chemical Workers International Union (*CW, Mar. 13*), we wish to set forth the following statement of intentions, which we believe represents the viewpoints of all the unions planning to merge into Oil and Chemical Workers International Union:

1. We believe collective bargaining . . . should be on the same level that company policy decisions are made. Those items of company policy that are fixed at the plant level should be negotiated at the plant level. Those items of company policy that are fixed at top headquarters . . . should be negotiated with top management on a companywide basis.

2. All negotiations by the union should be carried on by elected committees of employees, whether this be on the plant level or the companywide level.

3. We do not believe that an industrywide contract would be proper or feasible at this time or in the foreseeable future. At least insofar as substantial-size companies are concerned, we do not believe that any two companies should be covered by the same contract.

4. We believe it ridiculous to negotiate dozens of separate plant-by-plant agreements with a single company pertaining to . . . pension plans, savings plans, basic wages, etc.—which must be uniform throughout the company . . . must be determined . . . by top management.

5. While in ordinary circumstances the employees of different companies should be under different contracts, employees of the various companies should cooperate with one another through a single international union for oil and related industries, just as the various companies cooperate with one another through the American Petroleum Institute, the National Petroleum Council and various organizations, and through jointly owned subsidiaries—particularly pipelines, products exchange agreements, etc.

6. We see no objection to the use of the "pattern" device in collective bargaining, wherein negotiations with a leading company result in the establishment of conditions adopted as a pattern by other companies carrying on comparable operations and in comparable financial condition.

This we view as equivalent to the industry practice of following the patterns set by a leading company in each area on the pricing of crude oil and products. . .

7. Our proposed constitution provides that no contract can be terminated, no new contract proposals made to a company, and no contract entered into with a company unless such has been approved by majority vote of those members voting covered by the particular contract.

8. We seek precisely the same degree of industrywide, companywide and intercompany cooperation . . . as is now exercised by management. We seek no so-called "monopoly" greater than that now practiced by industry.

Whenever industry sees fit to split itself into hundreds of separate, unconnected and uncoordinated plants, we will be willing to revert to the status of hundreds of separate, unconnected and uncoordinated local unions. . .

O. A. KNIGHT
Chairman
Temporary Ratifying
Committee
Oil and Chemical Workers
International Union

DATES AHEAD

American Pharmaceutical Manufacturers Assn., annual meeting, Boca Raton Club, Boca Raton, Fla., March 29-31.

National Farm Chemurgic Council, Inc., annual conference, Peabody hotel, Memphis, Tenn., April 5-7.

American Oil Chemists' Society, annual meeting, Plaza hotel, San Antonio, Tex., April 12-14.

American Zinc Institute, annual meeting, Statler hotel, St. Louis, April 20-21.

Assn. of Consulting Chemists and Chemical Engineers, symposium and banquet, Belmont Plaza hotel, New York, April 27.

Air-Pollution Control Assn., annual meeting, Patten hotel, Chattanooga, Tenn., May 3-5.

Forest Products Research Society, national meeting, Grand Rapids, Mich., May 5-7.

American Institute of Chemists, annual meeting, Hotel Berkeley-Carteret, Asbury Park, N.J., May 12-14.

Flavoring Extract Manufacturers' Assn., annual convention, Biltmore hotel, New York, May 16-19.

Chemical Specialties Manufacturers' Assn., midyear meeting, Netherlands Plaza hotel, Cincinnati, May 23-25.

Manufacturing Chemists Assn., annual meeting and joint outing with SOCMA, Greenbrier hotel, White Sulphur Springs, W.Va., June 3-5.

American Plant Food Council, annual meeting, Homestead, Hot Springs, Va., June 10-13.

American Society for Testing Materials, annual meeting, Sherman and Morrison hotels, Chicago, June 13-18.

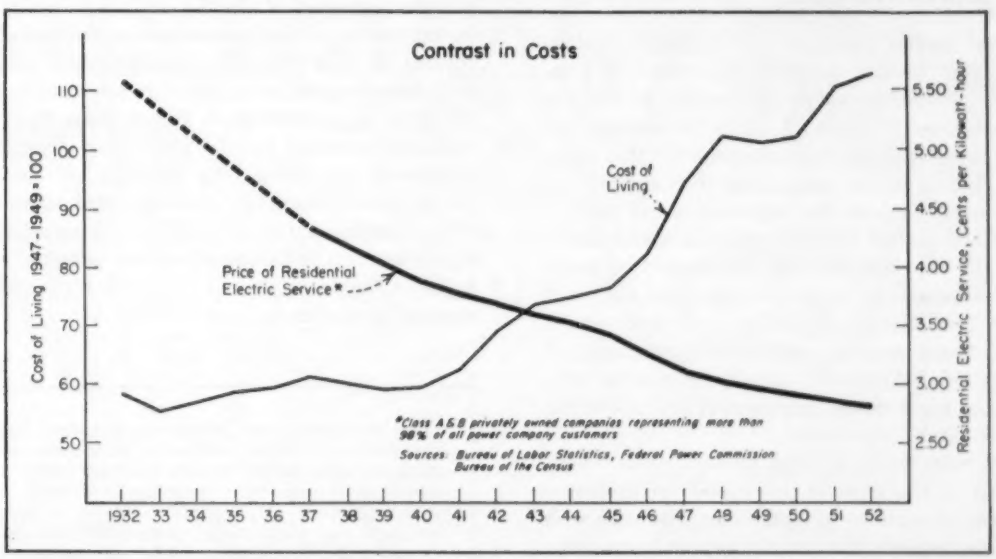
CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

A 20-YEAR RECORD...

The Electric Power Companies' Case for Public Confidence

An economic study of the record of the investor-owned electric power companies of the United States over the past twenty years underwrites their claim to public confidence today. A key factor of this record is set forth by the chart in the middle of this page. This shows that while the cost of living as a whole has almost doubled, the average price of electric energy for residential use in the United States has been cut in half.



The average prices of industrial and commercial power also are much lower than they were twenty years ago.

Such a study confirms the record on other key accomplishments of the electric power companies during the past two decades.

They have not failed, either in peace or war, to meet the nation's rapidly expanding electric power requirements. In paying tribute to the performance of these companies during World War II, J. A. Krug, Director of the Office of War Utilities, said, "Power has never been too little or too late." The same can be said for the entire period of the past twenty years.

To be ready with enough power – on time – the electric power companies have expanded their production fourfold since 1933. This has required an investment of over $17 billion in new facilities. To raise the funds for this investment they have enlisted the participation of about 3 million direct stockholders. Through life insurance companies, banks and similar institutions, about 90 million Americans – more than half of the nation's total population – have become investors in electric power companies. By thus relying on private investment for their expansion, the power companies have provided their

plant and operating equipment without burden on the taxpayer.

In addition, the investor-owned companies have paid about $12 billion in taxes to various governments – national, state and local – over the past twenty years. Unlike government-owned and -operated systems, they have received no public subsidies. When taxes and subsidies are taken into account, the rates for electricity charged by the investor-owned companies have been as low as, or lower than, those charged by government-owned and -operated systems.

Many Americans do not appreciate the job that the power companies have done over the past two decades. That is due, in part, to the public memory of financial abuses by some utility holding companies during the 1920's. This memory obscures a clear and unprejudiced view of the progress since those days. And some of the all-out advocates of reliance on government rather than on regulated private enterprise for the development of our power resources do their best to keep this memory of the past alive in the present.

An Impressive Case

Some special cases of electric power development may involve problems for which the investor-owned companies are unable to provide full solutions. This may be true, for example, of some large multiple-purpose projects that combine electric power generation with related developments such as the improvement of navigation, flood control and the irrigation of arid lands. Some of the economic and administrative problems imposed by such projects are not well adapted to effective handling by private enterprise. Flood control and the improvement of navigation, for example, usually involve the provision of much costly service over and above the cost of producing power.

It is true, however, that in some cases development of the electric power side of multiple-purpose projects by private enterprise may well be more feasible than would appear from statements by some government power advocates. And the record indicates that even in those projects on which both the power generation and the other services are handled by public authority, it may well be desirable to have the investor-owned companies assume the transmission and distribution functions.

Our study of the record of the investor-owned and -operated companies over the past twenty years has led us, of course, behind the statistics that bear on the wisdom of giving them a priority in the development of our power resources. It reveals that these enterprises are manned by people who, through lifetime experience, are peculiarly conversant with the needs of the communities they serve. They have given the consumer notably good service while conforming to standards set and enforced by public regulatory commissions. They have won the confidence of the investing public. By their nature and their experience they are competent to handle any power program that can be demonstrated to be economically sound.

The Paramount Public Interest

By their economic performance during the last twenty years, the electric power companies have earned the confidence of the public. By relying on these companies to meet its electric power requirements the public will fully protect its economic interest in ample and efficient service at fair prices.

That is where our study comes out. Our findings do not touch the political consideration that private operation of electric utilities under public regulation is a safeguard against further concentration of both political and economic power in a federal government that already commands too great a concentration. But if these findings make an economic case for preferring power development by tax-paying business as against power development by governmental agencies, they clear the way for an appeal to the paramount public interest in safeguarding our personal and political freedoms against the further encroachment of government.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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Donald C. McGraw

PRESIDENT

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U.S.I. CHEMICAL NEWS

March 27 ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1954

Cover Story Features Allethrin Synthesis

The cover story of the March issue of *Industrial and Engineering Chemistry* gives interesting details on an important U.S.I. accomplishment: the construction and operation of the nation's first full-scale plant for the synthesis of Allethrin, a highly effective insecticide. Photographs and two flow sheets describe the plant's 18-step process, and the present and future uses of Allethrin are discussed. The article, "Staff-Industry Collaborative Report: Allethrin," was jointly prepared by the U.S.I. technical staff and *I&EC*. Be sure not to miss it.

Bone Fractures Require More Methionine to Heal

Experiments using methionine tagged with radioactive sulfur indicated that methionine metabolism increases during healing of bone fractures. The experiments were conducted on mice *in vitro* and *in vivo*.

Compared with controls, the methionine metabolism increased 3-5 times in bone fracture areas.

This work adds to the many examples of the increased need for methionine in healing processes where tissue is damaged, such as wounds and burns, as well as bone fractures.

Use of CIPC Brings Weed Control Savings

In a recent article on the use of CIPC to control weeds in cotton, savings which more than pay for the cost of the chemical are reported. Chemical weed control is said to be the missing link in the complete mechanization of cotton production, with CIPC described as the chemical which is taking much of the hand labor out of this phase of cotton growing.

Among the important conclusions reached from work with CIPC are: weeds can be controlled in cotton more cheaply with CIPC than by other means; cotton that is kept free of weeds throughout the growing season will yield more, since there will be less competition from grass and weeds; the problem of recruiting and managing day labor has become a big headache, and most growers would like to see this eliminated; and through the use of CIPC, it is possible to get a better job of weed control with less injury to cotton than any other known method.

CIPC has many other promising uses for the control of weeds. It is being successfully used with soybeans, sugar beets, certain legumes, vegetable crops, strawberries and other crops.

U.S.I. produces both CIPC and IPC for formulators, who prepare ready-to-use herbicides for the farmer. Technical data on CIPC and IPC are available upon request.

New U.S.I. Alkyd Promises Longer Life, Better Appearance For Exterior House Paints

Should Save Many Dollars for American Homeowners

A new U.S.I. alkyd resin promises longer-lasting and better-looking outside house paints. Called Aroplaz 1400, it is the result of more than 7 years of research and practical testing. Paints containing this new resin should bring greater economy in home maintenance, since the major cost of painting a house is labor, not paint. From all indications, homes painted with Aroplaz 1400 paints will maintain a better looking appearance for a longer period of time. This should save money for the user by requiring less frequent repainting.

The longer life of house paints made with new Aroplaz 1400 promises less frequent repainting and money saved for the user.

Described as a pure, low viscosity alkyd, Aroplaz 1400 can be used in white or tinted paints in place of all or part of the oil (linseed, for example) used in ordinary house paints. Alkyd resins are widely recognized for their excellent durability by the paint and varnish industry, and now with Aroplaz 1400, the paint manufacturer may successfully incorporate this valuable alkyd resin property in his house paint formulations.

Created by Researchers

Aroplaz 1400 is the product of imaginative research work by U.S.I. As a basic producer of raw materials for the paint industry, U.S.I. continually searches for better products and improved processes. Many of these, such as Aroplaz 1400, offer paint manufacturers an opportunity to improve their products.

The new alkyd resin was created by starting with a series of fast drying, low viscosity alkyds which researchers thought potentially outstanding for use in house paints. One of these alkyds gave superior results in every way with the exception of brushing, which was rated as fair to good. Based on this background, an alkyd resin was developed possessing

MORE

New Process Offers Organic Peroxide Source

A new process using gum turpentine for the production of pinane hydroperoxide has been developed. Described as simple, rapid and economical, it offers a potential source of organic peroxides especially suitable for polymerization catalysts in the production of synthetic rubber, resins and plastics.

The process is said to have four main steps: hydrogenation of the turpentine to give pinane; purification of the pinane, usually by simple distillation; oxidation of the pinane to a peroxide content of about 50 percent; and stripping the oxidate under vacuum to recover the unoxidized pinane, leaving pinane hydroperoxide as a residue.

According to one of the men who developed the process, 8-pound batches of turpentine yield about 4-pounds of 80 to 90 percent pure peroxides. In earlier development work, chemists prepared a pure form of pinane hydroperoxide and established its chemical structure as cis-l-pinane 2-hydroperoxide.

Treated Paper Protects Food From Boring Insects

Food packaged in paper that had been treated with insecticide formulations containing pyrethrins and piperonyl butoxide (Pyrenone®) was successfully protected from boring insects in recent laboratory tests. According to the report, the treated paper gave protection for periods of time ranging from 2 months to more than a year, depending on the dosage and type of formulation.

The problem of protecting foods packaged in paper bags and packages from insects is important in the food industry. The new method of packaging in treated paper promises to be of considerable economic value to food packagers. Paper treated with the most effective formulation repelled boring insects for more than a year, while untreated papers were penetrated in about 1 week.

The report, which appeared in a leading food chemistry magazine, was prepared by the Research and Development Laboratories of U.S.I. Combinations of pyrethrins and piperonyl butoxide can be used on food containers with no toxic hazards and are marketed by U.S.I. under the registered trademark Pyrenone.

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March 27 ★ **U.S.I. CHEMICAL NEWS** ★ 1954

CONTINUED

New Alkyd for House Paints

all the desirable properties in addition to excellent brushing characteristics. The result was Aroplaz 1400.

Tests Show Superiority

Exposure tests show the advantages of alkyd exterior house paints over straight house paints. Cleaner, whiter surfaces are observed after exposure. Furthermore, the alkyd-base coatings are better than straight-oil paints in over-all durability. U.S.I. tests continue to add evidence that extremely high quality house paints can be produced by the use of Aroplaz 1400. Important advantages, such as improved gloss-retention, cleanliness and general appearance are apparent throughout the life of the paint. Moisture-blistering, one of the greatest causes of house paint failure, is more effectively resisted, and Aroplaz 1400 paints are superior to conventional oil house paints in freedom from metal-staining. Tests also have indicated that Aroplaz 1400 paints give equal ease of brushing.

Future uses for Aroplaz 1400 should include bulletin colors, trim paints, emulsion and awning paints in addition to house paints.

Aroplaz 1400, experimentally known as resin DX-159, is now in commercial production and is supplied at 100% solids content. Much data has been collected over the years in the testing of alkyd house paints. Detailed information, including suggested formulations, is now available to paint manufacturers who wish to make independent investigations.

For further information, paint manufacturers should write directly to the Editor of the U.S.I. Chemical News.

New Flowmeter Saves Time

Claimed to be the first of its kind ever produced, a gyroscopic mass flow meter measures the flow of gases, liquids or slurries. The new meter reads directly in pounds per minute or tons per hour and is expected to save time for process engineers who labor long hours converting volumetric measurements.

New Paper Gives Copies Without Carbon Paper

Paper which gives copies of business forms or letters without the use of carbon paper has been introduced. The new paper utilizes the reaction of a colorless chemical coating with a clay-like material and is expected to receive widespread use in the business world.

Advantages of the new carbonless system are said to include the elimination of smudging, speeded efficiency in handling forms, and an end to the dirt and bother of duplication with carbon paper inserts.

According to the manufacturer, two different coatings on ordinary paper are used in combination to give the desired number of copies. If, for example, an original and two copies are wanted, the underside of the first sheet is coated with the colorless chemical and the topside of the second sheet with the clay-like coating. The impact of the typewriter character or the pressure of a pencil on the first sheet drives the colorless chemical coating into contact with the clay-like coating on the topside of the second sheet. This causes an immediate chemical reaction which turns the clay-like material blue and leaves a clean, sharp impression on the second sheet. This process is repeated with the second and third sheets, the back of the second sheet also being coated with the colorless chemical. Reportedly, up to seven copies can be made on an electric typewriter.

New Mold Release Agent Has Variety of Uses

Developed in conjunction with resin manufacturers, a new mold release or parting agent offers a variety of uses to plastic fabricators. It is described as providing a ready release from molds of polyester resins and as being useful in both large and small fabrications. The material is said to find extensive use in cold molding and is supplied as a paste in two consistencies to accommodate varying conditions and types of molds.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

An improved laboratory washer, said to handle everything from over-size graduates to micro pipettes, is available. The manufacturer claims that a new series of glassware baskets extend the washer's versatility. **(No. 1020)**

An appetite stimulant and nutritional supplement useful in aiding appetite failures from old age or convalescence has been announced. It is said to provide balanced amounts of nutritional elements including B-complex factors and iron. **(No. 1021)**

A starting fluid especially suited to diesels is designed to eliminate the need for storing equipment in heated quarters to insure easy starting. Applied to the air stream of any diesel or gasoline engine, it reportedly offers sure-fire starts. **(No. 1022)**

A tough silicone rubber with a tear strength 2 to 3 times higher than any other silicone rubber is now in production. It is expected to find widespread use as a gasketing material in chemical processing equipment, where high temperature, pressure or vacuum exist. **(No. 1023)**

A new moisture determination instrument, reported to be the first advance in over twenty-five years using the xylol or toluol distillation technique, may save enough time to pay for itself in a few months. It is described as portable and as a complete unit within itself. **(No. 1024)**

Cement colors which are fast to alkali are available. According to the manufacturer, they can be mixed or trowled into the cement. **(No. 1025)**

A chemically inert, pipe-thread sealing compound prevents spiral wicking, leakage and contamination. It is said to give a leakproof seal against fluids and gases under pressure and to be suitable for process pipe lines and apparatus. **(No. 1026)**

A material which loosens metal parts stuck together, such as frozen bolts, is available in an aerosol container. It is reported to penetrate into spaces as small as one millionth of an inch, soften rust and dissolve dried oil and grease. **(No. 1027)**

Aimed at keeping drivers awake, a coffee-flavored caffeine pill in a malted milk base is said to be neither habit-forming nor a depressant. **(No. 1028)**

Cold metallizing of surfaces with aluminum is possible with a mixture of finely pulverized aluminum in a plastic base. According to the manufacturer, the mixture hardens to a plastic bonded aluminum surface which can be polished, ground, drilled or bent to a 45-degree angle without chipping or cracking. **(No. 1029)**

PRODUCTS OF U.S.I.

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Amyl Alcohol (Isoamyl Alcohol)
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Fusel Oil — Refined
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Completely Denatured—all regular and anhydrous formulas
Pure—190 proof U.S.P., Absolute—200 Proof
Solox*—proprietary solvent—regular and anhydrous

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U.S.I. Permanent Anti-Freeze

ETHERS
Ethyl Ether, U.S.P.
Ethyl Ether, Absolute—A.C.S.

ACETONE—A.C.S.

ANSOLS
Ansol* M
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ACETIC ESTERS
Amyl Acetate—Commercial and High Test
Butyl Acetate
Ethyl Acetate—all grades
Normal-Propyl Acetate

OXALIC ESTERS
Dibutyl Oxalate
Diethyl Oxalate

PHTHALIC ESTERS
Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate

OTHER ESTERS
Diatol*
Diethyl Carbonate
Ethyl Chloroformate

RESINS (Synthetic and Natural)
Arochem*—modified types
Arofene*—pure phenolics
Aroflat*—for special flat finishes
Aroflint*—room temperature curing phenolic
Aroplaz*—alkyds and allied materials
Aropol*—copolymer modified alkyds
Ester Gums—all types
Natural Resins—all standard grades

INSECTICIDE MATERIALS
Allethrin
CPR Concentrates: Liquid & Dust
Piperonyl Butoxide
Piperonyl Cyclonene
Pyranone* Concentrates: Liquid & Dust
Pyrethrum Products: Liquid and Dust
Rotenone Products: Liquid and Dust

INSECTIFUGE MATERIALS
Indalone*
Triple-Mix Repellents

INTERMEDIATES
Acetoacetanilide
Acetoacet-ortho-chloroanilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloroanilide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

FEED PRODUCTS
Calcium Pantothenate (Feed Grade)
Choline Chloride
Curbay B-G* 80
DL-Methionine (Feed Grade)
Niacin, U.S.P.
Riboflavin Concentrates
Special Liquid Curbay*
U.S.I. Vitamin B_{12} and Antibiotic Feed Supplements
Vacatone* 40

OTHER PRODUCTS
Acetaldehyde
Caustic Soda
Ethylene
IPC (Isopropyl-N-Phenyl Carbamate)
CIPC
Liquid Chlorine
Metallic Sodium
Methionine (Pharm.)
N-Acetyl DL-Methionine
Nitrocellulose Solns.
Propionaldehyde
Propionic Acid
Sulfuric Acid
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Chemical Week
BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES

NEWSLETTER

A strong plug for scientific research in general and basic research in particular was given by President Eisenhower in his executive order outlining the part that various government research agencies are expected to play in these programs. But there is no shakeup involved for any of them, apparently.

The directive calls for increased emphasis on fundamental research and guarantees the support of the President in such programs.

More than half of the country's research and development is paid for by the federal government and more than 90% of this money is going into applied and development research. An indication of Eisenhower's interest in basic research is the amount set aside in his 1955 budget for the National Science Foundation: $14 million compared with $8 million in 1954 and $4,750,000 in 1953.

Specifically, the President directed NSF to study scientific activities throughout the country, then to recommend to him policies to strengthen the research effort as related to the federal government. The Foundation will continue to handle basic research programs with universities and other nonprofit institutions.

The order asks NSF to continue its studies and recommendations relating to scientific personnel. (Results of these studies have been shown in the Roster of Scientific Personnel, prepared under the direction of NSF with the help of the scientific societies.)

Agencies within the government working on a project needing basic research may engage in it in connection with the work in hand. But in general, the responsibility for basic studies will rest with the NSF; for applied research, with the particular government agencies working towards some practical applications.

•

An interindustry compromise on food additive legislation was the goal of a meeting in Washington last week, but possibility of harmony was almost shattered by an event the day before: Congressman Joseph O'Hara (Minn.) introduced an additive bill (H.R.8418) quite similar to an earlier legislative draft prepared by the miller-baker-meat industry group, one faction invited to the joint meeting.

The O'Hara measure is almost a straight new drug-type regulation measure; however, it does require that a new additive not be poisonous and deleterious "for its intended use." This would supposedly call for Food & Drug Administration to set quantitative limits for any additive. As such it would be a concession to chemical industry people who have felt previous proposals unworkable by making manufacturers prove their materials not poisonous or deleterious in any possible quantity.

Some attendants at the meeting felt the best course is to adopt the O'Hara measure. Others felt that their groups' viewpoints should now first be expressed in separate bills—compromise could come later.

Perhaps the only thing now completely sure: new food additive legislation will not be passed this session.

•

Facts don't always square with theory. Goodyear Board Chairman P. W. Litchfield said this week that synthetic rubber production capacity

must soon be expanded to meet increasing world demand. Meanwhile, Port Neches (Tex.) citizens are concerned over the loss of $75,300 monthly payroll resulting from the layoff of almost 400 synthetic rubber plant workers —a 20% cut in normal working force. Says one company spokesman: "If present trends continue, we may be forced to lay off even more."

But the disparity isn't as great as it may seem: Litchfield was talking about four or five years hence; Port Neches is worrying about next month.

•

More paychecks—some 500—will be dealt in Texas if Stanolind Oil & Gas decides to buy and reactivate the Carthage Hydrocol plant at Brownsville. Local residents are keeping their fingers crossed, will know one way or the other next week, when Stanolind's option expires.

•

Now Texas' natural gas gathering tax is really dead. The U. S. Supreme Court declared it unconstitutional last month (CW Newsletter, Feb. 20), last week denied Attorney General John Ben Shepperd's petition for reconsideration.

•

On their last legs, too, are investigations of two questionable cure-alls: krebiozen for cancer, AD-X2 for batteries.

• An Illinois state legislative committee met this week to consider proposals for winding up its inquiry into krebiozen, a mystery-surrounded drug that turned the state university into a battleground. The plan is to have (1) a new test carried out by an impartial laboratory satisfactory to both proponents and critics of the material, and (2) a limited number of further hearings.

• The Federal Trade Commission has issued complaint of false and misleading advertising of battery additive AD-X2. Hearings are scheduled to start May 10. In view of the Kelly report's exoneration of the National Bureau of Standards, which found no merit in the product, most Washington observers feel that this may be AD-X2's last going-over.

•

Whatever pet name you may have for the current "rolling readjustment," there's still heartening news of expansion and change:

• Shea Chemical (Baltimore) will break ground next week at Jeffersonville, Ind., for a plant to convert elemental phosphorus from its Columbia, Tenn., plant into 50,000 tons/year of phosphoric acid, 30,000 tons of sodium tripolyphosphate and 10,000 tons of sodium metaphosphates. Sighting mainly on detergent customers in town and at nearby Cincinnati, the plant will ship as far south as New Orleans, as far northwest as Pittsburgh. Shea will buck competition, however, from Virginia-Carolina's quarter-as-large plant at Cincinnati. Both are scheduled for June start-up.

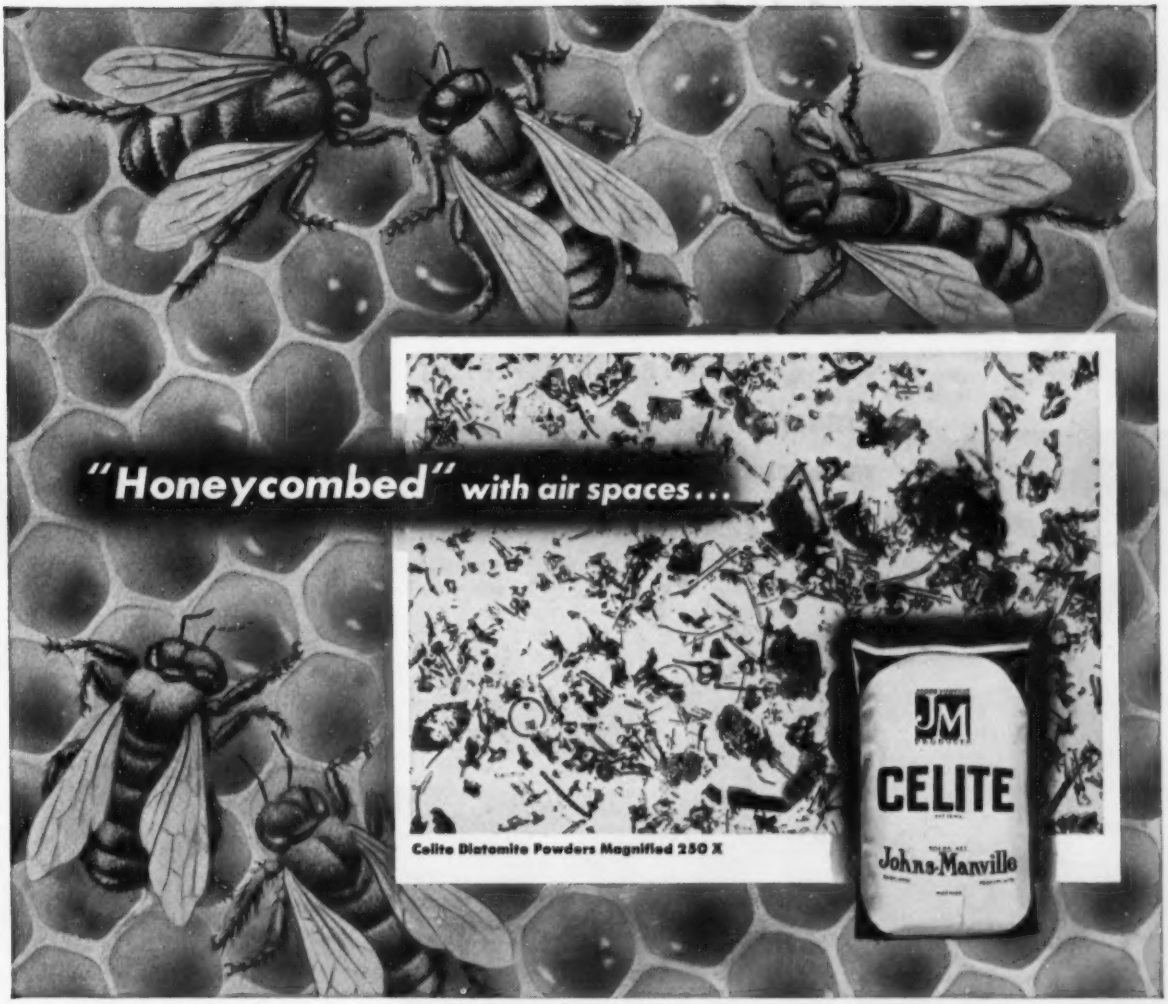
• Illinois Farm Supply Co. plans a 50,000 tons/year mixed fertilizer plant at Tuscola, Ill.—adjacent to National Petro Chemical, from which it will buy its ammonia and sulfuric acid. Construction will probably begin in May or June; operation, next January.

• Attapulgus Minerals & Chemicals Corp., Philadelphia, plans to merge with Edgar Bros. Co., Metuchen, N. J., and change the name of the joint firm to American Minerals & Chemicals Corp. But directors and stockholders must still approve the plan.

•

Ho, Hum! In a first novel, "Jonathan Troy," by Edward Abbey, reviewed in this week's book sections, the 19-year-old protagonist loves a voluptuous schoolmate, Miss Etheline Glycol.

. . . The Editors



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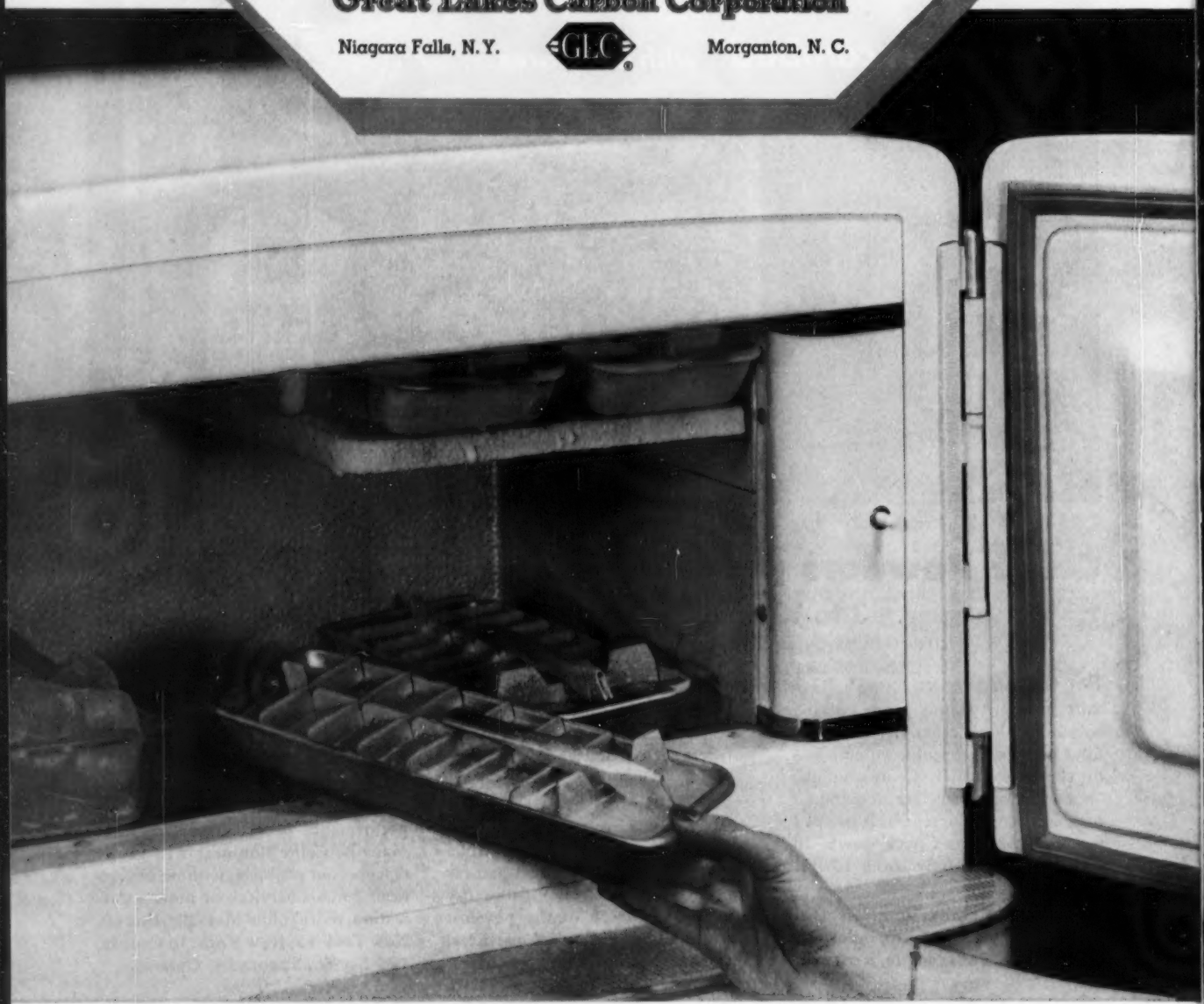

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Watchful Waiting

On the eve of President Eisenhower's message to Congress on tariff legislation, expected by the end of the month, the chemical industry finds itself keeping up its guard in two directions. Some Washington economists have attacked the industry's stand on the need for tariff protection, and some importers of European dyestuffs seem about to win a point on Customs Bureau regulations.

From a 531-page document presenting the trade policy views of professional economists who comprised the staff of the Randall commission, the industry gets cold comfort. Not to be confused with the already published report of the commission itself, these "staff papers" set out several broad conclusions about chemical imports that clash head-on with industry views.

Say these economists:

• "Much of the chemical industry would scarcely be affected by the competitive impact of increased imports."

• "The few chemicals that might be imported in the event of tariff suspension comprise a relatively minor part of the huge chemical industry. In most industrial chemicals U.S. industry is able to hold its own against foreign competition and in many lines it is on a pronounced export basis."

Reaction was quick. One top executive characterizes the references to chemicals as "an unfair summation."

"It is impossible," said he, "to generalize about the chemical industry and tariffs. We make too many different kinds of products. Some, produced very cheaply here, undoubtedly have no fear of foreign competition; thousands of others would be seriously injured by tariff suspension. Each group of commodities must be handled on a selective basis.

"We think that two world wars have proved how essential the chemical industry is to national defense. And no generalization can alter the fact that much of the industry must be protected or perish."

The new criticism, however, will cause the industry more annoyance than deep concern. It's a fact that economists' conclusions are a far remove from actual legislation.

A matter of more practical consequence: the issue between the coal-tar dye industry and importers over government red tape. Importers say there's too much of it; domestic manufacturers that there's not enough.

Last July, the Customs Bureau proposed a new label and invoice identification form for use by dyestuff importers. It would have required information about the chemical structure of dyes at time of entry into this country. When importers objected that such designation would mean disclosure of trade secrets, the Treasury Dept. felt the complaint justified and dropped the requirement, substituting a new proposal. This latest regulation would require, however, detailed information to aid customs appraisers in determining whether imports are actually competitive with domestics dyes. Unless coal-tar dye makers protest officially, the new form will become effective April 13.

Protection, like liberty, it seems, carries the price tag of eternal vigilance.

Duel on Dividends

This week and next week, the size of next year's corporate tax bills is taking shape. And as the Republican-sponsored federal revenue bill rolls through the Senate, it appears that its company-tax provisions are as good as on the law-books, with the Democrats balking only at the clause that would trim the amount of "double taxation" on dividends.

Following last week's narrow (210 to 204) vote by which the House turned down the Democratic proposal to substitute a $100 increase in individual dependency exemptions, the Senate Finance Committee, under Colorado's Eugene Millikin, is holding a two-week hearing on the Administration-approved measure. Both in committee and again on the Senate floor, there'll be Democratic opposition to the cut on dividend taxes, with long-time Sen. Walter George (Georgia) leading the charge.

But both parties agree on these provisions of concern to chemical companies:

• Extending the 52% corporate tax rate for another year, instead of dropping it to 47% on April 1.

• Putting large corporations—those with annual tax liability of $50,000 or more—partly on a pay-as-you-go basis. This proposal calls for those firms to pay each September and December installments rising from 5% of estimated year's liability in 1955 to 25% in 1959 and thereafter.

• Stepping up depreciation allowances, expected to save industrial firms some $300 million/year.

• Overhauling the entire Internal Revenue Code, with administrative procedures to be streamlined.

In point of fact, odds are that the entire GOP bill will be passed, dividend clause and all. Insiders predicted that George may lose the support of two Democratic cohorts in the Finance Committee, and that the real

WIDE WORLD

GEORGIA'S GEORGE: On company tax, no Democratic opposition . . .

fight would come on the Senate floor, where the exemption amendment will produce extended debate. However, Administration leaders were cheered by the successful fight against the exemption increase in the House (after President Eisenhower made a nationwide radio and television appeal for support) and feel that their hand has been strengthened for the Senate tussle.

All industrial firms stand to gain from the move to correct present tax "inequities." But large chemical companies—many of which rely heavily on their subsidiaries' earnings—have a big stake in the duel on dividend taxation.

LUNCHEONS: AEC's Manov (light suit) and Abbott Labs.' Tabern (right).

Business Sizes up the Atom

Atomic energy came out of the clouds last week at the Atomic Industrial Forum's First Annual Conference. Businessmen – big and small – heard about the industrial uses of nuclear reactors (from Chauncey Starr, director of North American Aviation's Atomic Energy Research Dept.), sized up the consulting services available to companies going into the atom field, delved into radioactive tracer uses (with Arthur D. Little's Eaton).

Chemical men were out in force. Their major interest: the substantial new opportunities opening up for industrial products, services and techniques –now that atomic energy has come down to every-day business levels.

Always an intriguing topic of discussion: the potential uses of atomic energy for promoting chemical reactions. States Brookhaven's Manowitz: atomic energy reactors have now been developed to a point where it's economically justifiable for the small chemical company to build small nuclear reactors. Particularly where production of chemicals with high price differentials is concerned . . . the project should receive serious consideration from planning committees reviewing expansion plans.

Further encouraging more companies to get into the picture was Foster Wheeler's Earle Mills. Said Mills: "The more companies that become active in the field of atomic energy, the faster the new industry will advance."

"We're in a transition period in our atomic energy program in the U.S.," agrees AEC's Manov. There are today 800 different industrial companies in 1,100 different locations using radioactive materials in industrial research or process control. But in the next five years, it's estimated that half the industries in the U.S. will benefit from the use of radioisotopes. Fission products are being evaluated in their possible use in the sterilization and preservation of food; there's a good chance that within the next 5 to 20 years atomic power will be competitive with fossil fuels and hydro-electric power.

Standing to Profit: Standing most to profit from the use of atomic power, according to Forum spokesmen are the 4 million small businesses across the U.S. Why: economists have proved that 3% of the selling price of the average finished article sold today represents cost of power to its manufacturer. That makes the race for competitive economic power especially attractive to companies turning out small, relatively high-priced items.

Denying the fact that the Atomic Act of 1946 bars real industrial participation in the atomic energy program, Manov points to suggested changes backed by the Eisenhower Administration. Included: revisions enabling private companies to own fissionable materials, relaxation of patent regulations, health and safety factors.

QUERIES: Tech. Operations' Schorr, Tracer

HUDDLES: Atomic Forum's Robbins and Townsend, and GE's Cook confer.

CONFABS: Facing camera, MIT's Goldbrith, Oak Ridge's Grigorieff's, NA's Starr.

Lab's Holdam, U. S. Radium's Wallhausen.

There's a chance that the changes will pass through Congress in due course of time, but if the process is to be speeded up it may behoove private industry to look hard at possibilities for profitable venture (on a risk-capital basis), then put pressure on the government for extended participation.

Immediate Gainers: Referring to the potential uses of radiation in the chemical industry, North American Aviation's Chauncey Starr says first to profit will be rubber companies (involved in vulcanization), plastic processing firms, seeking increased temperature resistance, pharmaceutical companies, concerned with the sterilization of heat-sensitive products such as blood serum and antibiotics.

Outlining the tracer uses of radioactive materials, Arthur D. Little's Edward Eaton states that one firm (using an impregnated catalyst in petroleum cracking) has already saved over $100,000 "in increased efficiency." Another (making salt cakes for cattle) was able to determine the proper degree of iodide solubility through use of radioactive iodine.

Consulting services are available to the chemical company interested in atomic energy, affirms Food Machinery's W. L. Davidson. The AEC stands ready and willing to help; it's up to individual firms to take advantage of the opportunity afforded them.

Loath but Muted

Canadians are still smoldering about the U.S. court order for division of hefty Canadian Industries Ltd. into two separately owned companies (*CW, March 6*), but they are no longer so outspoken about this "affront to national pride."

After Federal Judge Sylvester Ryan handed down his decree that Du Pont and Imperial Chemical Industries must end their joint operations in Canada and South America, Canadian newspapers blasted this move as an invasion of Canada's sovereignty. But as of this week, just one month before CIL stockholders are scheduled to decide on segregation details at their annual meeting, Canadian opinion seems to parallel a thought of MacBeth's: if the separation proposed by the two big parent companies will end present doubts and anxieties, "then 'twere well it were done quickly."

Bowing Gracefully: Granted that ICI and Du Pont must carry out the order, then, it must be conceded that the job of splitting CIL has been planned well, according to Wellington Jeffers, financial editor of the Toronto *Globe and Mail*.

"Perhaps it may be all for the best," Jeffers writes, "but the principle is not good when a court of one country sees fit to act to affect financial organization in another where no demand of any kind exists for it." He notes that the division plan "is scrupulously fair to the public shareholders," and that the two parent companies have accepted the court order "gracefully and without complaint."

Praising the "wise generosity of the parent companies" during their 44-year operation of CIL, Jeffers declares: "The curbing of flagrant monopolistic practices is at times a need, but so is the curbing of a state when it moves—even with the best of intentions—against financing and organization and centralization which are producing good, not bad, results."

One Plant Bisected: Toronto's *Financial Post* waxed ironic about the fence to be built through the middle of one big CIL plant as part of the segregation move "to please the masterminds who demanded that this divorce be contrived." It frowns on the U.S. policy that sanctions such action regardless of "whether the arrangements between the parties actually injured the public."

This is hard for Canadians to understand. Their law exempts from prosecution a combine that isn't detrimental to the public interest.

"Initially, there won't be much real competition between the two new companies," the *Post* predicts, "but competition is certainly not ruled out. Should (ICI's new $20-million Terylene plant at Millhaven, Ont.) become part of CIL-54 [as planned], its products will directly compete with Du Pont-produced nylon and Orlon for a share of the synthetic yarns dollar."

Within the ranks of CIL employees, the general feeling is that—because of the uncertainty about personnel deployment and the postponement of new development plans—the sooner the split is accomplished, the better for all concerned.

The London (Ont.) *Free Press* confines its comments to expressing hope that both new companies will prosper and that no one will be hurt. But among some Canadians who espouse North American solidarity, there's fear that the court order—even though it seems to be strictly legal—may have left a rift in Canadian-U.S. relations that will persist for a long time.

MISSOURI'S SHORT: For firms that covet chlorine plant, disposal terms set.

Deadline for Decision

If the country's economic climate is as inscrutable as its April weather, Monsanto Chemical Co. may have a tough time trying to decide before the May 10 deadline whether it wants to buy the government-owned chlorine plant at Muscle Shoals, Ala.

Monsanto, which built the plant for the government as an emergency production backstop during the Korean war, has been notified that it must contract to buy the $20.5-million plant by that date or lose its option.

In case it says "no," Washington has taken final steps for the Army's Corps of Engineers to sell or lease the plant. The General Services Administration has delegated authority to Defense Secretary Wilson to dispose of the property, and Rep. Dewey Short's House Armed Services Committee approved the Army's plan for sale or lease, "whichever would be more advantageous."

EXPANSION . . .

Paper: Crown Zellerbach Corp. will expand facilities at its St. Helens Pulp & Paper Co. at a cost of $14 million. Contributing to the expansion: a new tissue-paper machine described as the largest of its kind in the world.

•

Phthalic Anhydride: Reichhold Chemicals, Inc., New York will build a phthalic anhydride plant adjacent to its present facilities at Elizabeth, N.J. At the same time, company officials state, maleic anhydride units will be expanded. The combined expansion will boost Reichhold's total annual production of phthalic to 80 million lbs., of maleic to 10 million lbs.

•

Natural Gas: The new 63-mile pipeline linking Dow's Texas Div. plants with the Collegeport-Citrus Grove natural gas field will be completed this month. Preliminary work for the project—installation of river crossings on the Colorado, San Bernard and Brazos Rivers—was completed early in January.

•

Sulfuric Acid: Cornwell Chemical Corp., Cornwells Heights, Pa. has completed expansion of its sulfuric acid facilities "to meet the demand created by the growing industrialization of the Delaware Valley."

COMPANIES . . .

Yazoo City, Miss. plans to sell $150,000 in industrial bonds to back further expansion of the Mississippi Chemical Corp. The bonds were authorized two years ago as part of a $750,000 bond issue to assist in expansion plans, then under consideration by Mississippi Chemical.

•

The Chemical Plants Div., Blaw-Knox Co., Pittsburgh, has been awarded the contract for engineering and design of modifications planned for the Atomic Energy Commission's chemical processing plant in Idaho, now operated by the Phillips Petroleum Co., Bartlesville, Okla. The plant is currently engaged in the reclamation of unburned uranium-235 from used reactor fuel elements.

•

More year-end earnings reports:

- Celanese Corp. of America's sales slipped 0.4%, but net profits (after taxes) gained 15.6%.
- Pittsburgh Coke & Chemical Co. sales skyrocketed 36.0%, net profits soared 32.0%.
- Freeport Sulphur's sales jumped 26.9%; net profits rose 16.5%.

•

New incorporation:

- International Petroleum and Chemical Exchange, Inc. has been granted a charter of incorporation by state of Louisiana listing capital stock of $25,000.

•

Corporate name change:

- Conco Chemical Co., Inc. of Louisiana has filed articles with the office of the secretary of state, Baton Rouge, changing its name to Sanco Industries of Louisiana, Inc.

Melding the Old and the New

NATIONAL PETRO CHEMICAL'S new plant at Tuscola, Ill.—1953's splashiest addition to petrochemical production—isn't completely the last word in modern appliances. Its blacksmith shop breathes old-world charm; its smithy spends his free hours reshoeing horses that are owned by neighboring farmers.

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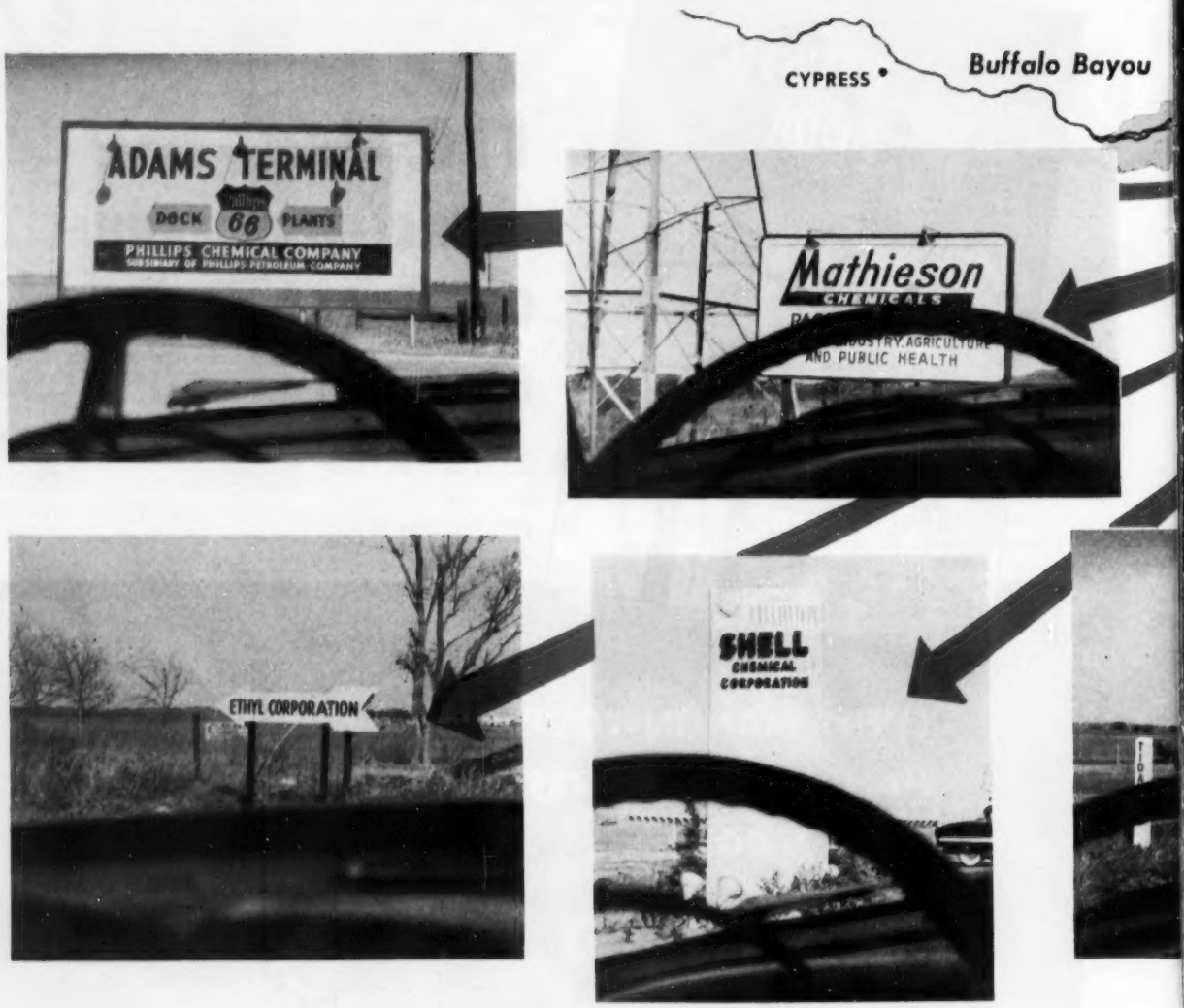


TOURIST'S EYE VIEW OF HOUSTON'S 'CHEMICAL ROW:' Along Gulf Freeway, a 20-mile string of chemical-plant pearls.

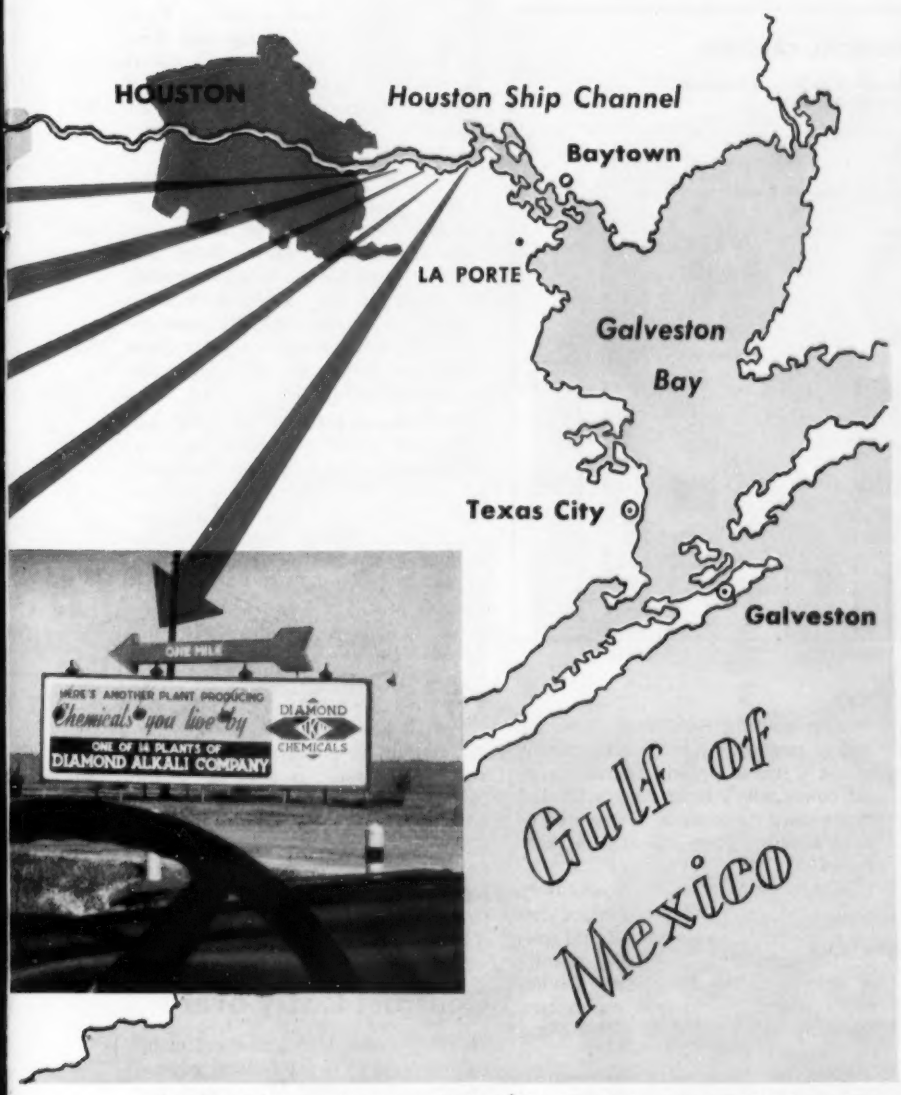
Channelside Industry: Flourishing Growth

There's always something about Texas to remind you of spring. This month the prairies are greening up; next month the bluebonnets will be blossoming; but throughout the year along the Houston Ship Channel, new chemical plants are springing up and older ones are putting out new shoots.

If you drive along the Gulf Freeway this week, you can see signs of growth at many of the sites that line the 58-mile canal connecting inland Houston with the seven seas: Phillips Chemical is completing the doubling of its ammonium sulfate capacity, adding a superphosphate unit and an anhydrous ammonia plant; Gulf Chemical (on the north side of the channel) is expanding its plant, intends to produce several additional chemicals; Shell Chemical is adding to its synthetic glycerine capacity; and at Baytown, Consolidated Chemical is finishing its engineering preparations for construction of a plant to produce sulfuric acid from sludges furnished by the adjacent Humble Oil Refinery.

Sulfuric from Sludge: That's by no means all. Consolidated Chemical and Sinclair Oil are starting a cooperative effort to capture and utilize sulfur dioxide fumes from the Sinclair refinery. Sinclair will install facilities to recover heavy acid sludges, and Consolidated will build a $3.5-million plant to convert the sludge to sulfuric acid. Sinclair also will build a modified Claus plant to recover sulfur from hydrogen sulfide gases, using Girbitol scrubbers.

Still more expansion along this route: Humble Oil has under construction several new units in its refinery proper. Crown Central Petroleum has concluded arrangements with Houdry Process for a 5,000-bbl./day Houdriformer to be constructed at its Pasadena refinery; the unit will be designed primarily for upgrading motor gasoline, but will be usable for producing aromatics and aviation blending stocks.



For chemical companies, a near-ideal combination of raw materials, shipping, climate.

On the Texas City end of the channel, Texas City Chemicals is preparing plans to enlarge its recently completed plant. Monsanto has under way a research center and a polyethylene unit (initial capacity 66 million lbs./year), and Monsanto and Heyden Chemical are jointly building a methanol plant. Also at Texas City, Pan Am Refining has begun construction of a 21,000-bbl./day ultraforming unit that will permit an increase in quantity and quality of its gasolines.

Windshield View of Success: What keeps industry growing and thriving along this bayou-pocked strip of coastal plain? The answer seems to be that the companies locating in the Houston-Galveston area succeeded in finding what they came there expecting to find: plentiful raw materials close at hand, cheap water-borne transportation, year-round working climate, and a dependable labor supply.

Much of this area's industrial success story can be glimpsed through your auto windshield as you drive southeast out of Houston over the $28-million superhighway opened in 1952; but the industrial development phenomenon can best be appreciated by old-time Texans who traveled through this countryside before the channel was opened to sea-going traffic in 1915.

Before then, Buffalo Bayou was a sluggish, snag-infested stream that was navigable to flat-bottomed little skiffs propelled by poles, and to little else. Now extensive dredging operations have transformed it into a 300-ft.-wide, 35-ft.-deep waterway that has made once-landlocked Houston one of the world's major seaports. The largest freighters of many nations churn up and down the channel in ever-increasing numbers, taking on and disgorging tremendous tonnages of oil, chemicals, cotton, grain, and countless other commodities.

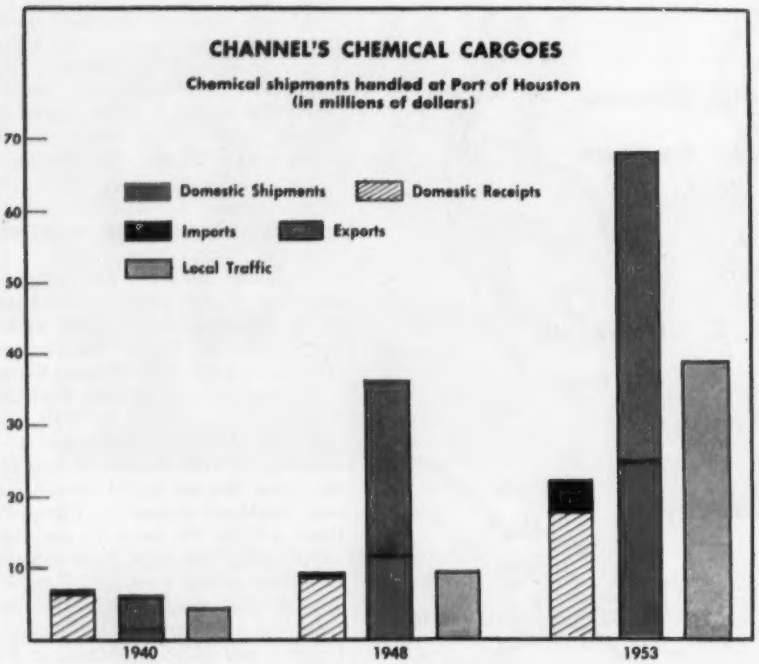
Chemical Pioneers: The influx of chemical process plants to the banks of the Houston Ship channel started shortly after the Port of Houston was officially opened; Consolidated Chemical Industries and Armour Fertilizer Works were pioneers. In 1919, Sinclair and Humble Oil started construction of refineries, but then a full ten years elapsed before new industrial neighbors moved in: Champion Paper & Fibre Co. erected a pulp and paper mill at Pasadena, Eastern States Petroleum set up a refinery alongside Consolidated's acid plant in Houston.

On the lower end of the channel, Republic Oil and Pan American Refining built refineries at Texas City in the early 1930's. Then came World War II and the nation's big defense build-up. This brought six newcomers to the channel in the early 1940's: Shell Chemical, Nyotex Chemicals, Mathieson Alkali (now Mathieson Chemical), General Tire & Rubber, Goodyear Synthetic Rubber Corp., and Sinclair Rubber.

But still greater growth came to this industrial complex after the end of World War II. Joining the chemical and petrochemical community here since 1945 have been such "big league" concerns as Du Pont, Gulf Chemical, Rohm & Haas, Diamond Alkali, Phillips Chemical, San Jacinto Chemical, Ethyl Corp., Lubrizol, Cactus, Best Fertilizer, Chipman, Tenn-Tex Alloy & Chemical, J. M. Huber, and Merichem. At Texas City, Republic and Pan Am Refining were followed by Carbide & Carbon, Monsanto, Sid Richardson Refining, Texas City Refining, Texas City Chemicals, and the U. S. government's tin smelter.

Nearly a Billion: These chemical plants and petroleum refineries are prominent among a wide array of industries clustered along the channel from Galveston to Houston. Other stars in this manufacturing constellation are flour mills, pulp and paper mills, cement factories, steel mills.

Where the chemical plants predominate is toward the Houston end of the big ditch. On both sides of the channel, starting at the turning basin and extending 20 miles toward the



Gulf, are almost uninterrupted lines of chemical process plants—about 40 in all. Representing a total investment of approximately $915 million, they produce some 35 agricultural chemicals and fertilizers, 32 inorganic chemicals, 104 organic chemicals, more than 106 petrochemicals, and in addition salt, sulfur, elemental gases, carbon black and synthetic rubber.

Most of the raw materials for these many products come directly from the Houston area's wealth of natural resources. Still increasing supplies* of petroleum and natural gas, besides serving as feedstocks for an almost infinite number of petrochemicals, provide comparatively cheap sources of fuel for heating and power. Within a radius of 100 miles are 268 fields producing 200 million bbls. of oil per year, and pipelines from other parts of Texas and from Oklahoma and Louisiana bring to Houston Ship Channel terminals more than two million bbls. of crude oil every day—with new lines being added and old ones being enlarged.

Sulfur, Salt and Sea: Sulfur is being mined at about 25 locations along the Gulf Coast, and soon three plants along the channel will be recovering this element from refinery gases. Known salt domes in Texas and Louisiana number about 150. Lime is available as oyster shells in reefs and beds literally dotting the Texas shoreline; and of course an inexhaustible supply of sea water is lapping at this chemical community's front door, with 100 times more magnesium in every cubic mile than present annual U.S. consumption.†

Water, coming both from deep wells and from surface bodies, has been adequate for industrial and residential use; and Houston's recently completed $30-million San Jacinto River Water Project will supply raw water up to 75 m.g.d. to plants along the channel.

Land has been relatively inexpensive, and selection of plant sites has been simplified by the level coastal plains. The climate has led to adoption of a new and lower-cost open type of construction, also has played a part in attracting more people to live in Houston and vicinity.

Inland Seaport: As all these natural assets came to be known, industry moved in fast. When the ship channel was opened, that first year's cargo totaled only 86,000 tons—about 18 shiploads. Now, more than 107 steamship lines and 80 tanker lines join hands through the Port of Houston with six trunk-line railroad systems; and the Intracoastal Canal, serving the entire coastline of Texas and Louisiana, makes possible direct barge service over the nation's inland waterways system to such centers as Pittsburgh, Cincinnati, Chicago and Kansas City. Last year, Houston's waterborne shipping amounted to a record 44,144,305 tons, outranked only by New York in one-harbor tonnage in the U.S.

Thus far, most of the chemical activity along the Houston Ship Channel has been confined to the production of chemical intermediates and basic compounds on a mass-production scale; in only a few instances—notably in the cases of fertilizers, insecticides and detergents—have those chemicals been processed into consumer-use end-products.

Only the Beginning? But what has happened to date is believed by close observers to be only the beginning of chemical industry development there. Number and variety of products made are increasing steadily, and the outlook is for this trend to continue. It seems inevitable that the large-scale availability and relatively low production cost of chemicals produced along the channel will act as a powerful magnet to attract many diversified industries to exploit the locality's chemicals and other assets.

Already, Houstonians are proudly saying that their community is the "capital" of the broad Gulf Coast chemical empire that stretches some 500 miles along the Texas and Louisiana shorelines. The future, they contend, will more than justify all the corporate faith that has been demonstrated in the Ship Channel area.

Contract Carry-over

Chemical companies furnishing materials or services to the federal government were watching Washington this week as the Senate moved toward consideration of the Republican-sponsored bill extending and amending the contract renegotiation act.

When the bill was introduced last year, Democrats opened fire on it as "a big business give-away" because of the provision that would have exempted all standard commercial items and all contracts under $500,000 from renegotiation. Previously, all contracts for $250,000 or more have been subject to renegotiation.

Now the Senate Finance Committee has agreed to this change: a contractor will submit sufficient data to the Renegotiation Board, which then can establish that competitive conditions are such as to protect the government from paying excessive prices.

With that modification agreed to, approval of the bill seems certain.

* Increased consumption of these resources has been paralleled by new discoveries so that proved reserves remain more than adequate.

† Oliver Osborn, "The Golden Gulf Coast," *Journal of the Electrochemical Society*, July 1953, p. 1730.

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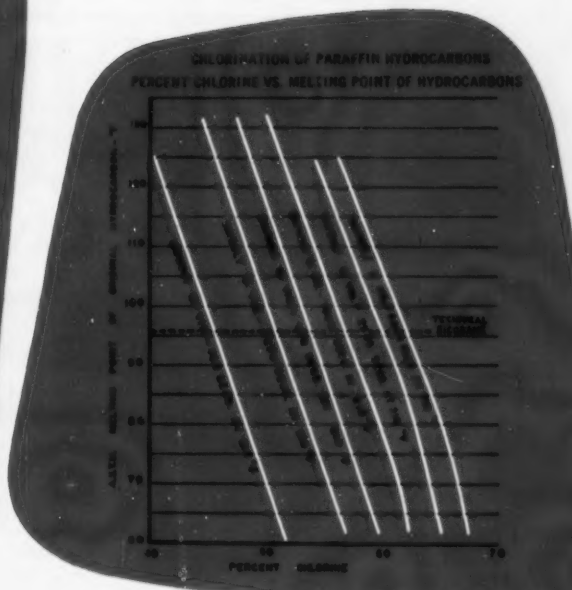

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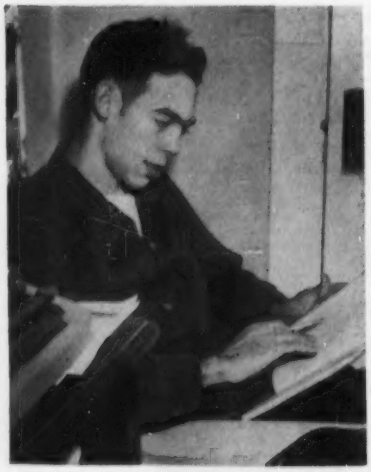


STUDENT ENGINEERS: Spend three months at Georgia Tech . . .

Co-op Training

Sparking a new interest in industry-educational training is the program currently under way at Dow's Texas Div. and Georgia Institute of Technology. While not new in the U.S., the program's a new departure for the Texas Div., has resulted in adding a new type of job classification to the company's personnel listing.

Beamed at training young chemical engineers for industry duties, the system's working on an exchange basis; plans call for two students to follow a job-and-classroom swapping program for a period of five years. When each has completed his required tours, Georgia Tech will grant a degree in chemical engineering; in addition, the experience gained at Dow will add up to two full years of job credits.

The program was launched last September when Bill Matson, a Georgia Tech. freshman (with three months schooling behind him) joined the Texas Div. His classification: student engineer. His assignment: the magnesium production group.

Matson spent a full three months after his arrival immersed in a series of assignments planned specifically to tie in with his classroom work—and at the same time designed to fit in with an over-all grasp of the whole magnesium process.

On Dec. 28, Matson packed his bags, returned to college to put in another learning stint, and was replaced by another Georgia Tech. freshman, Clifford Wilson (*see cuts*). Most important step in the plan, Dow management men point out, is the selection of two students with the same classification and the same field of study interest. The parallel's immeasurably important so as not to disrupt plant activities, is equally valuable in crediting progress reports.

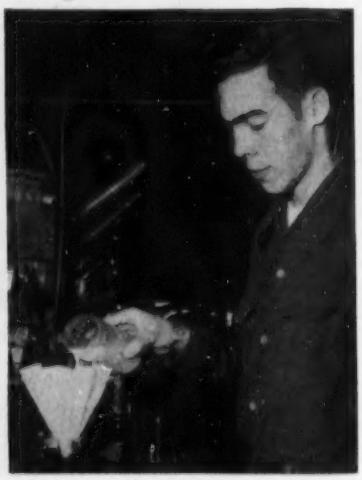
Wilson and Matson find they can apply their trade arrangements to off-the-job situations, too. Matson, on his arrival at Freeport did most of the spade work in locating a place to live, boarding arrangements, other details; Wilson fell into the pattern quickly.

Texas Div. senior engineers are impressed with the initial results of their new training plan, envision greater rewards when the students in training report for full-time work. "They actually have more than a two-year jump on other graduates," points out one project engineer. "What one of the boys learns even in his first junkets here helps him to digest more thoroughly the information picked up at Tech."

"It will solve a major manpower problem for us, too," echoes another. "Each year, heretofore, we wondered whether we would be able to fill job openings. Personnel directors were harried; the smooth progress of much project work was disturbed." The situation's not cleared up yet, "but if the program is expanded, a lot of our problems will be eliminated."

From Georgia Tech: "The scheme's not new with us (Allied Chemical & Dye has tried it); but we're behind it all the way." The initiative has to come from industry, but "the colleges are eager to cooperate."

Student reaction: unqualified agreement that "appreciation of industry's problems makes any undergraduate more receptive to learning . . . teaches him the value of proper training."



. . . followed by three months at on-the-job assignments.

Opening the Door

German-Soviet trade—the subject of vigilant Allied inspection—has been increasing in recent months. But the rise is all due to the private efforts of individual businessmen and the East Committee of the Federation of German Industry—not the Bonn government. Reason: Allied embargo policies, which hamstring major trade agreements.

Typical of the type of Russo-German negotiations now being conducted, was the trip to Moscow of six leading German industrialists in January. Each businessman traveled separately, made his own travel and visa arrangements, looked after his own affairs. Although complete details are unavailable, it's understood that the Germans brought home hard durum wheat and minerals in return for German machinery and chemicals.

While in Russia, the negotiators were liberally treated—even allowed to stroll through Moscow without official escort. Russians, it's reported, are extremely well informed on German conditions, capacities, and capabilities, "act almost as if they were average Western-oriented businessmen."

According to the Germans, the greatest pressure for consumer goods in Russia today seems to be coming from the industrial regions. Stalin was able to keep the masses on short rations by saying "I saved you from the Fascist invaders," but the Malenkov regime has yet to prove its own worth to the people.

Thus far (as far as Allied sources can ascertain) all Russo-German deals involving chemicals seem to be on a barter basis and are likely to so continue. Basic reason: German banks won't grant credits to Russia at this time, and the Russians aren't too eager to push matters, since officially the Russian government doesn't recognize the Bonn government.

Private deals, however, may be expected to mount in the coming months. Encouraging the trend: the increase in British and French exports to Russia, which appear to the Germans as an outright attempt to get first crack at the potentially enormous Russian market. Overproduction of certain chemicals in West Germany is currently adding to the pressure.

First break will probably come with an official protest on Allied embargo policies. Though now complying with the restrictions in full, German chemical men feel the embargo should be "radically liberalized . . . since war with Russia is not now imminent."

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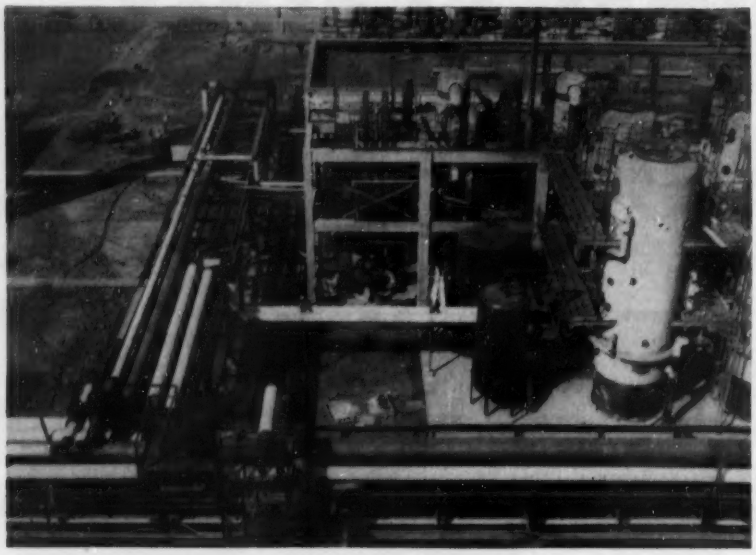


UP FOR SALE: At Institute, W. Va., first of the standard government-owned synthetic plants.

Considering, Not Reneging

In direct repudiation of recent reports that rubber producers are backtracking on their desire to purchase government-owned synthetic rubber plants was last week's interim report from the Rubber Producing Facilities Disposal Commission. "Keen competition" is marked among private industry "for 27 government-owned plants valued at close to half a billion dollars." Executives in the rubber, chemical and petroleum fields are credited with "feeling that they have a responsibility . . . in offering realistic bids." Some 274 requests for information and bidding instructions have already been received; more are expected to pour in during the next several weeks.

Bids however have been slower to filter in. "The reason," points out one Akron rubber company president, "is that purchase is a tremendously complicated affair. Corporate lawyers require time allowances; board of directors meetings can be long and protracted."

Because of the dearth of purchase proposals, however, the commission's program has been under attack by Democratic leaders in recent weeks. Labeled a Republican give-away concession to big business, Democrats are predicting that the commission will eventually settle for far less than the $500 million the plants cost when new 10 years ago (*CW, Feb. 20*).

Commission officials, on the other hand, feel that "full, fair value will be obtained." Opines one Washington observer. "Commission members are not nearly as concerned about the sale of the plants as they are that private buyers may abandon production for economic reasons and divert the facilities to other purposes." Tagged as part of the holdup: "the political and monopoly angles of industry purchase are tricky to handle. They'll be settled to everyone's satisfaction—but it may take time."

Since their nomination last November, commission members have inspected 25 of the plants, have talked with some three dozen prospective bidders, and received eight plant bids complete except for price.

But after May 27, further negotiation will be strictly in the hands of the commission for a six-month period. Then (under terms of the disposal policy adopted last year) Congress will inspect the deal as well as an opinion by the Attorney General as to the anti-trust implications of the package. If (and here's what the commission apparently fears is the greatest danger) total annual capacity of the entire disposal falls below 500,000 long tons of general purpose synthetic (Gr-S) or 43,000 tons of butyl rubber (Gr-I), the whole deal's automatically canceled.

No one's willing to deny, however, that all difficulties can be cleared away soon "particularly since many rubber companies are openly pleased by the recent invitation, advocated by Congressman Schaeffer, to submit bids without prices. Says one treasurer: "It should really get things going."

Beyond the Call

Drawing a closer bond of kinship between the community and the its industrial plants is a never-ending trial to public relations directors. And with the current furor over pollution and zoning laws, good relations can spell the difference between an amicable settlement and a costly court battle.

In Texas, for example, chemical companies in recent years have tried to meet the problem head-on. One phase of their system: to encourage plant employees to take an active part in civic affairs.

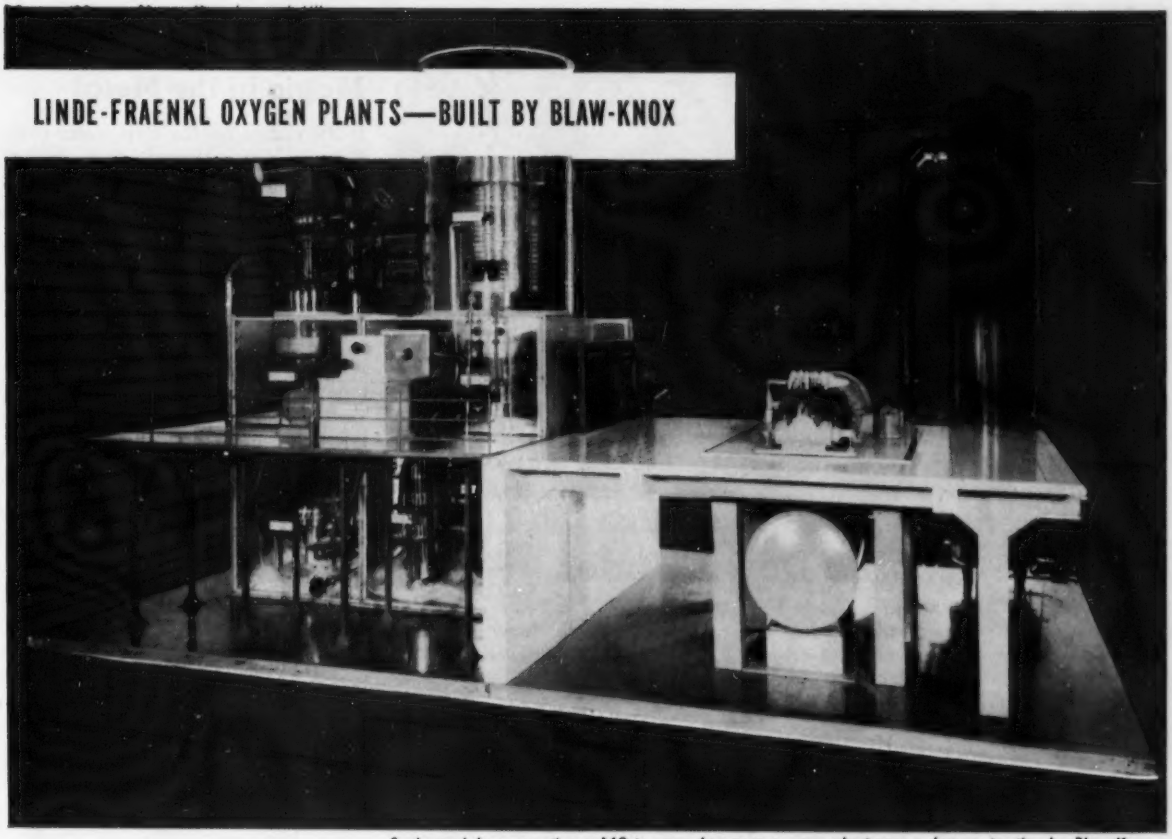
Typical of the community interest Texas chemical men are taking:

- Diamond's Fred Gray (personnel manager) is past president of the Chamber of Commerce, Pasadena.
- Monsanto's H. K. Eckert (plant manager) has served on the Texas City city council several times; so has Pan American Refining's B. G. Babin (plant manager).
- Dow has a delegation serving in the four cities that make up what's know as Brazoport; one mayor (a Dow employee) reports he devotes 16 hours a week to his civic job—"five of them on Dow time."
- Celanese's Bruce S. Ainsworth (technical assistant to the production superintendent) has served as Bishop's mayor for two years.

Management makes no attempt to select men for potential public service, simply encourages employees who become interested by granting them time off to do their civic jobs. And public relations directors are entranced with the dividends reaped, realize there's no substitute for "getting in on the ground floor with the townfolk."

AINSWORTH: Retiring as mayor of of Bishop after two years.

LINDE-FRAENKL OXYGEN PLANTS—BUILT BY BLAW-KNOX



Scale model representing a 160 ton per day pure oxygen plant now under construction by Blaw-Knox.

all oxygen–99.5% pure at the lowest total operating cost of any tonnage oxygen unit available

Recent design improvements enable new Linde-Fraenkl plants to produce *all oxygen* at 99.5 percent purity at the lowest total operating cost of any tonnage oxygen unit available.

An average power consumption of only 450 horsepower hours is required to produce one ton of 99.5 percent oxygen. Such low power consumption is the result of excellent thermodynamic design and low pressure drops throughout the plant.

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The low pressure requirements of the plant reduce the costs of compressors, drives and auxiliaries.

Because of their advanced design, compact arrangement and relatively few moving parts, Blaw-Knox-built, Linde-Fraenkl units produce more oxygen of greater purity at the lowest total operating cost of any tonnage oxygen plants available. They are ideal for production of argon as a by-product.

If you are interested in low cost tonnage production of oxygen, write for Blaw-Knox Bulletin No. 2402.

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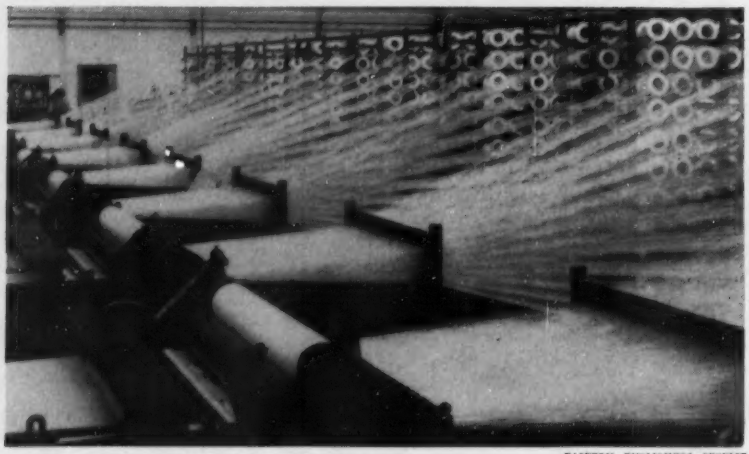

EASTERN PUBLISHERS SERVICE

PRODDING PROGRESS: Courtaulds' viscose rayon plant at Tomago, NSW.

Double Trouble Down Under

Like hallmarks, two features characterize the Australian chemical industry today. The field's dominated by a handful of firms (established by British and U.S. parent companies), and most of the capital sunk in expansion has been supplied by foreign sources.

Australia has gained from technical knowledge abroad, but some freedom to expand into basic chemical production has been forfeited. Why: companies with large holdings overseas prefer to import raw materials and intermediates simply upgrade their products locally.

Disturbed by the resulting economic repercussions, the Australian government is currently trying to rectify the situation by offering financial support to domestic firms interested in basic chemical production. Its first venture will be a £6-million investment to convert existing sulfuric acid plants to the use of indigenous pyrites.

EASTERN PUBLISHERS SERVICE

STAFFED BY BRITISH: Courtauld executives Frank Wilkins (left) and George Edwards.

Meanwhile, Courtauld's expanded viscose rayon facilities, now in operation, have spurred production of cellulose acetate and the needed acetic anhydride. Nylon production units (on the planning boards) will open markets for benzol and ammonia. Conscious of the upcoming demands, the government is examining the question of whether bounties will protect the Australian chemical industry better than have tariff duties.

Getting a Start: Already, with government backing, an ammonium sulfate plant is going up in Tasmania, to produce 55,000 tons next year; Australia's only calcium carbide plant will be stepped up to double capacity within the next six months. Initiated by Korean war needs' synthetic phenol plants are today more than able to cope with domestic needs; emphasis on the production of chromium chemicals has made Australia largely independent of overseas supplies.

But in other fields, the plight of Australia's chemical industry is still that of dependent stepchild. As an example, pharmaceuticals and insecticides are produced in great quantities, but imports of materials associated with their manufacture are enormous. There's also an imperative need for local manufacture of chlorine and alkalis. Both are currently imported at costs too high for economic use.

Cheaper ammonia (demanded as a source of nitrogen fertilizer for the sugar cane industry) is an ever-growing need; potash fertilizers and potassium salts must be produced at home if Australia is to win independence. Well aware of its task, the government is striving to cope with the problem, but the struggle's apt to be arduous and long.

Magic in the Metal

If the claims for the Evis water conditioner are sustained, that device should be a boon to all chemical companies except the ones that make water treatment compounds and ion-exchange materials.

But if the Federal Trade Commission can back up its charges that those claims are "false, misleading and deceptive," then San Francisco's two-year-old Evis Mfg. Co. will have to tone down its advertising claims by about 90%, and there'll be that much less competition for water treatment methods.

FTC will hold a hearing April 8 in San Franscisco on its formal complaint against Evis, based on provisions of law to protect consumers against false advertising. Chemical and other industrial management men have been exposed to Evis advertisements stating that:

"The Specially Processed Cast Metal of the Evis Conditioner establishes a continuing catalytic action. This action effectively modifies the physical behavior of water-solids and entrained gases. This remarkable effect not only eliminates scale in pipes and equipment, but . . . (also) . . . accomplishes quick, thorough scale clean-ups."

Evis officials assert that their conditioners—which are nothing more than pipe fittings, either gray cast-iron or bronze, containing a cast-in vertical post around which the water flows—have a "secret ingredient" in the metal that, by magnetic or polarizing action, "sequesters" the solid particles in the water.

Independent investigators have been unable to detect the secret ingredient, say their laboratory trials fail to support the company's claims. The Evis answer to this is that "Such people would claim a magnet couldn't pick up iron because it fails to pick up copper."

Among Evis claims: promotes action of chemicals in water, improves coffee taste, makes greener lawns.

A patent application is pending, but Evis says it's in no hurry for a patent "unless someone starts infringing." (Critically disposed engineers suspect that the delay points to skepticism on the part of Patent Office staff members.)

Having sold more than 100,000 units—including industrial models costing up to $4,000 each—Evis would like to keep on selling in all 48 states. If so, says FTC, Evis must either prove or retract such claims as "makes one gallon of water do the work of two."

SWIFT
does nature two better

- Oleic Acid (Red Oil)
- Animal Fatty Acids
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- Hydrogenated Fatty Acids & Glycerides
- Larex (Swift's Lard Oils)
- Neatex (Swift's Neat's-foot Oils)
- Spermex (Swift's Sperm Oils)
- Spermaceti U. S. P.
- Monoglycerides
- Sulfonated Oils
- Wool Oils
- Anti-Foam Agents
- Glycerine
- Tallows
- Palmex (for Steel Mills)

● In producing industrial oils and chemicals, Swift does nature *one* better. In producing them with modern equipment under the strictest and most professional laboratory and production control, Swift does nature *two* better.

Through extensive plant facilities in Hammond, Indiana, Harrison, New Jersey, and Chicago, Illinois, Swift oils and fatty acids are manufactured from animal, vegetable and marine sources. Because of these facilities and experienced personnel, Swift engineers are able to derive the *most* from the raw materials with which they work. The result? . . . a variety of versatile, quality products and product combinations to meet a wide variety of specialized needs.

Yes, in manufacturing industrial oils and chemicals, Swift does nature *one* better—but it is because Swift *makes* Swift products that you can depend upon their quality . . . and can *rely* on Swift for your industrial oil and fatty acid needs.

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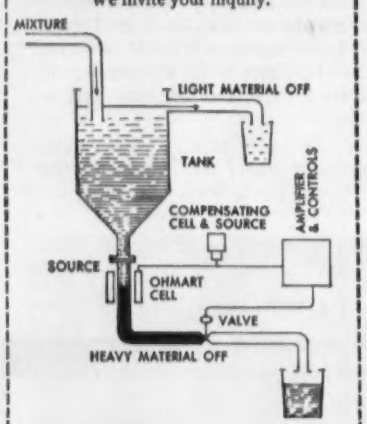
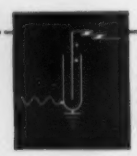
Here's a typical Ohmart installation—to control the draining off of the heavy material in a tank after separation of a heavy and light materials mixture. The Ohmart Density Gauge detects the interface level as it reaches the desired point, shuts off the flow automatically! Ohmart Density Gauges are performing many other measurement and control tasks throughout industry, involving liquids, slurries, sludges, in difficult and "hidden" processes . . . wherever density is a function of the desired measurement. Basis of all Ohmart instruments are Ohmart Cells, which convert radioactive energy directly into electrical energy.

Ohmart instruments require –

NO HIGH VOLTAGE POWER SUPPLY—NO DIRECT CONTACT WITH PROCESS MATERIAL—NO SAMPLING—NO PROCESS INTERFERENCE—NO SPECIAL PIPING—NO PROCESS PRESSURE OR TEMPERATURE LIMITATION—NO CONTINUOUS PURGING—NO MOVING PARTS—NO COMPLICATED WIRING—NO EXPLOSION HAZARD—NO DANGER TO PERSONNEL

We invite your inquiry.





Electricity From Radioactivity

the ohmart corp.

Department S-10
2236 BOGEN STREET
CINCINNATI 14, OHIO

LATEST ADDITION: Cominco's ammonium phosphate facilities at Kimberley.

FOREIGN . . . . .

Ammonium Phosphate/Canada: Consolidated Mining and Smelting Co. has started production at its $9 million ammonium phosphate plant at Kimberley, B.C.—adjacent to its Sullivan Concentrator (see cut). This completes Cominco's $17 million expansion project, raises fertilizer output by more than 150,000 tons annually (to some 700,000 tons in 1954). Shipments to the U.S. have increased correspondingly—to 450,000 tons in 1953.

•

Alcohol/Sweden: Sweden's almost insignificant imports of ethyl alcohol (estimated at 6,000 tons in 1953) will probably be stopped altogether if a current proposal made by the AB Svensk Sprit goes through. Svensk Sprit's plan: to let manufacturers of methyl alcohol in Sweden dispose of their (cellulose companies') surplus output—thus saving import dollars. Chemical firms, desiring to buy wood alcohol in Sweden today are forced to go through the government liquor monopoly, choose instead to import from Great Britain and the U.S.

•

Lubricants/Mexico: Salamanca's new $26 million lubricants plant (built by the government oil monopoly, Petroleos Mexicanos) will be producing 14,000 bbls. of lubricating oils, greases, paraffin by next August. Mexico City officials are not talking—but it's feared the production will have a sudden impact on the $10 million/year lubricant importing business.

Most large U.S. oil companies, while forbidden to deal in gasoline in Mexico, have large distribution centers there for importing oils, lubricants. One possibility: a prohibitive duty on such products after the Salamanca plant comes on-stream.

•

Insecticides/Mexico: Stauffer Chemical Co. has opened a second insecticide dust plant in Mexico through its subsidiary Stauffer de Mexico, S.A. It is at Rio Bravo, Tamaulipas, deep in the heart of the rich Matamoros-Reynosa cotton producing area.

•

Sulfur/Mexico: Mexico's sulfur production rose to 94,000 tons in 1953—nearly double 1952 output. Estimates for 1954: 201,000 tons; for 1955, 383,000 tons.

•

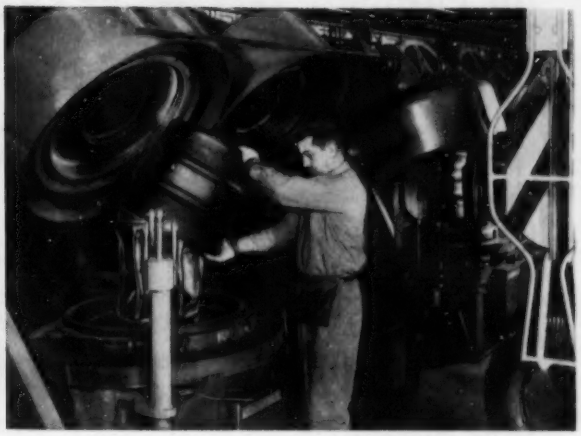
Rayon/South Africa: The first group of a 700-man contingent of Italian technicians has arrived in Natal to begin work on the $22-million rayon plant jointly sponsored by Courtaulds, Snia Viscosa (Italy), and the Industrial Corp. of S. Africa. When in full production, the plant's expected to require 160,000 tons of timber annually.

LEGAL . . . . . .

No 'Per Se' Guilt: There's been no lull in activity on the part of the Federal Trade Commission lately, but its new policies are likely to net fewer "guilty" decisions in unfair trade practices cases. Latest FTC moves in the Beltone Hearing Aid and Outboard

Paint, Varnish and Lacquer

Motor Oil and Gasoline (Additives)



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PETROHOL
Methyl Ethyl Ketone
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Isopropyl Acetate
Acetone
Methyl Ethyl Ketone
Ethyl Ether
Isopropyl Ether
Dicyclopentadiene
Naphthenic Acids
Iso-Octyl Alcohol
Decyl Alcohol
Denatured Ethyl Alcohol

CHEMICAL

PETROHOL 91
PETROHOL 95
PETROHOL 99
JAYSOL
Iso-Octyl Alcohol
Decyl Alcohol
Denatured Ethyl Alcohol
Tridecyl Alcohol
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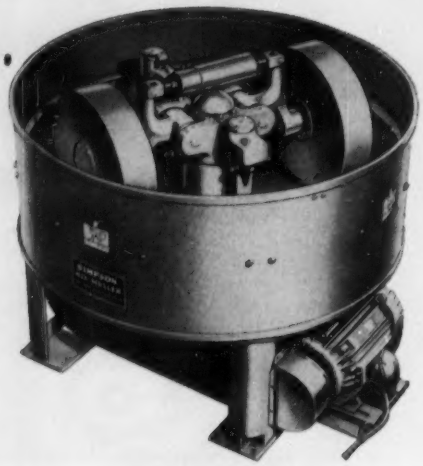
Rx: to relieve Quality Control "headaches"...



BLEND MATERIALS IN SIMPSON *MIX-MULLERS*

IF you are having quality control "headaches," it will pay you to take a good close look at your *mixing* operations. Experience has shown that improperly mixed materials can often be the cause of inferior end-products or processes.

The type of mixing equipment you use is, of course, the secret to properly controlled mixing. When you use Simpson Mix-Mullers, you are assured of complete control at all stages of mixing . . . with uniformly blended batches that will be the same—day in, day out—as proved by hundreds of successful applications throughout the chemical process, food and ceramic industries.

Built in twelve basic models, in capacities from 1/10 to 60 cu. ft., Simpson Mix-Mullers all give you the time-tested mulling principle of controlled mixing, with emphasis on improved quality at lower mixing cost.

Let a National Engineer show you how these versatile Mix-Mullers can help solve your particular mixing problems. Write for details.

MULLING GIVES YOU POSITIVE CONTROLLED RESULTS

Watch the practiced technique of a chemist's mortar and pestle—the intensive rubbing and smearing actions—and basically, THAT'S MULLING! Mulling with a SIMPSON Mix-Muller utilizes a special pair of revolving mullers and plows mounted on a stationary pan. The mullers are adjustable and are supported by rocker arms. This leaves them free to ride on the material, creating a true mulling action as they revolve. The results are thorough, more rapid blending.

SIMPSON *MIX-MULLER* DIVISION

NATIONAL ENGINEERING CO. (Not Inc.)
612 Machinery Hall Building
CHICAGO 6, ILLINOIS

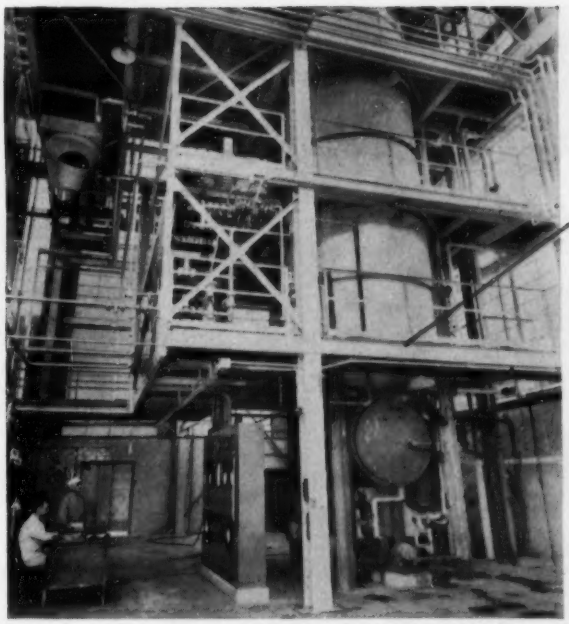
WIDE WORLD

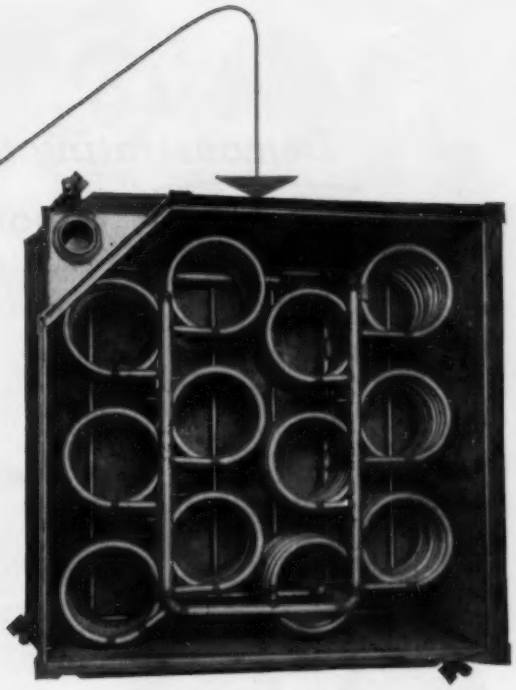
FTC's HOWREY: Not business practices themselves, but their actual effect.

Marine & Mfg. cases show that Chairman Edward Howrey and the other commissioners are through with the old "per se" rule, under which a firm could be found guilty for carrying on certain business practices, regardless of their effect on competition. The new policy: FTC will also take into account evidence that the practices complained of are not curbing competition.

Other recent FTC developments:

- In twin cases involving "internal technicalities" about pricing practices, Joseph E. Seagram & Sons and Schenley Industries have signed separate but similar consent decrees in which they agree to keep their respective subsidiaries from price-fixing. FTC then dismissed monopoly charges against the two parent companies.
- "Illogical" is the way a spokesman for Crown Zellerbach Corp. describes FTC's charge that Crown Zellerbach's acquisition of St. Helen's Pulp & Paper last year "may lessen competition or tend to create a monopoly." Company attorney Philip Ehrlich, Sr., also says that Crown Zellerbach is spending $15 million to increase St. Helen's capacity by 70,000 tons/year, and that this is "of great value to the economic development of the Northwest."
- A cease-and-desist order has been tossed at the Veltex Co., Birmingham, Ala. FTC says that Veltex may not advertise that its vitamin-and-mineral drug product has therapeutic value in treatment of certain ailments unless it specifies that the conditions have been caused by deficiency of vitamins B_1, B_2 niacinamide or iron.





A 7,500 pound per hour Votator Semi-Continuous Deodorizer installed at Bayonne, N. J. This is designated a semi-continuous deodorizer because the oil is processed in small, individual batches. Deodorizer proper consists of tall, cylindrical carbon steel shell, inside of which are supported five superimposed trays made of stainless steel. Cooling or heating coils are also stainless steel.

We put the Bendability into Stainless Steel Tubing and Pipe

Here's tubing that's easy to coil because it's uniformly ductile, easily workable. And it's one of the big reasons you'll find it in equipment manufactured by the Votator Division of The Girdler Company.

ELECTRUNITE Stainless steel tubing and pipe have other advantages for the manufacturer. Wall thickness is uniform, and that's important. So are uniform diameter, uniform concentricity and uniform strength. And ELECTRUNITE Tubing meets many ASTM specifications, including A-214 for Carbon and A-269 in stainless analyses. It's also made to meet many customer specifications.

ELECTRUNITE Heat Exchanger Tubes have no hidden defects, because this tubing is made from flat-rolled steel that's inspected on both sides before the tubing is formed. It's free from scale, scabs and slivers, has a fine surface that resists corrosion. No longitudinal thin spots, either.

Before you consider new equipment . . . or replacements . . . get all the facts about ELECTRUNITE Heat Exchanger Tubes, available in carbon or stainless analyses. Write for Booklet CEC-54.

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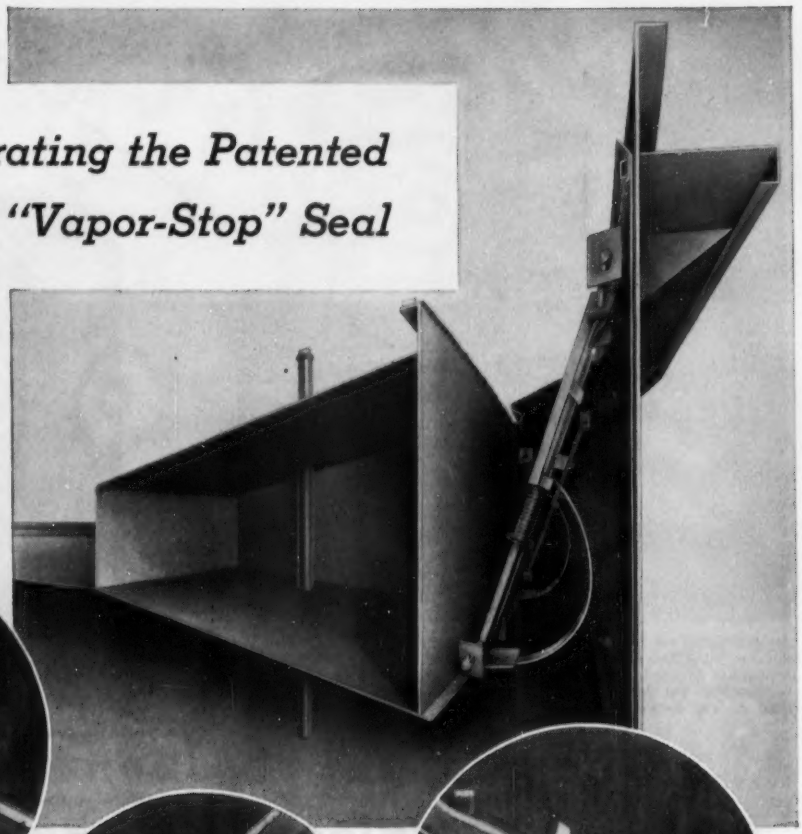
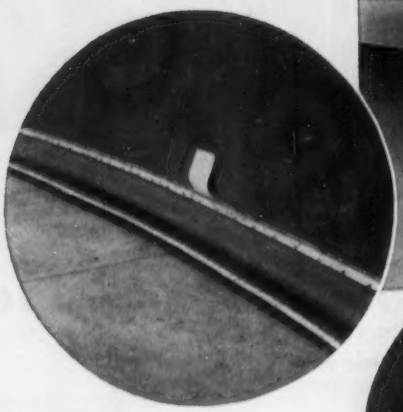
BOILER, CONDENSER AND HEAT EXCHANGER TUBES

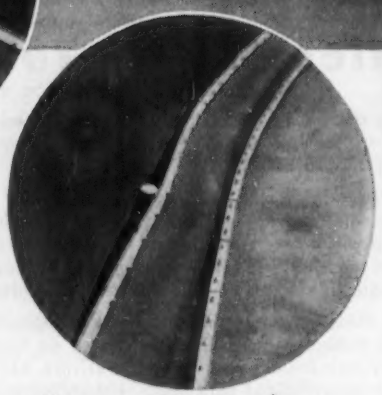
Made by the producers of ELECTRUNITE . . . The Original Electric Welded Boiler Tube

Demonstrating the Patented GRAVER *"Vapor-Stop" Seal*

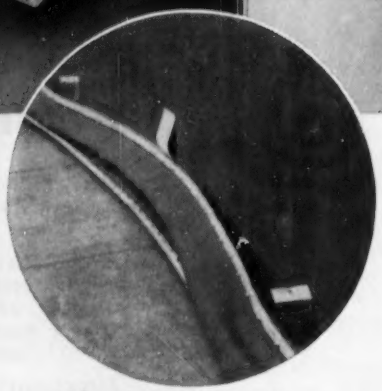




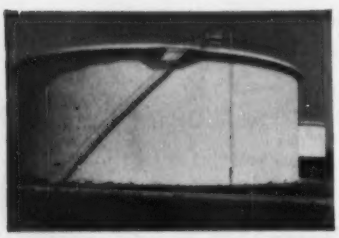
it's tight! As seen above, the Graver "Vapor-Stop" Seal provides a firm closure between the roof and tank shell—so tight that a piece of paper will not slip through.



it's sensitive! Despite its effective closure, the sealing mechanism is so sensitive it does not break the egg shown above, indicating the friction-free, long-lasting performance that the seal provides.



it's flexible! The seal is free to move over obstructions, yet continues to close the gap and prevent loss of vapors. It is successful on both converted tank shells and new construction.



The seal mechanism is an integral part of all Graver Floating Roof designs, including the Double-Deck Floating Roof tank and the Center-Weighted Pontoon and Pan-type Floating Roof tanks.

This patented seal is the key to the successful functioning of Graver Floating Roof tanks. Composed of two mechanisms—a weighted arcuate pusher and a spring-actuated hanger, it acts as a "Vapor-Stop," preventing loss of volatile vapors. The seal provides positive centering action for the roof. It also prevents the entrance of air and rain, and resists corrosion.

Simple and foolproof, it eliminates the need for multiple seals. The mechanisms are completely covered, and the fabric is asbestos coated with Neoprene, impervious to vapors. Graver's "Vapor-Stop" Seal is fire-resistant and Underwriters' Laboratories approved.

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...a specific conservation design to fit every need.

GRAVER TANK & MFG. CO., INC.

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LABOR

Few New Locals: Organizing work continues throughout the chemical industry this year, but only a few new locals have been set up.

• In the organizing campaign at Allied's Solvay Process plant at Moundsville, W. Va., the United Gas, Coke & Chemical Workers (CIO) won out over District 50 of the United Mine Workers; balloting was 48 to 42.

• The Oil Workers International Union (CIO) has been certified as bargaining agent for employees of Western Chemicals Limited, whose new petrochemical plant at Duvernay, Alberta, went on stream last December.

• Biggest plant force to be unionized lately: the 325 employees of the nylon chemicals plant that began operations late last year at Maitland, Ontario. This is one of the Canadian Industries Limited plants scheduled to be transferred to Du Pont of Canada under the CIL segregation plan (*CW, March 6*). The Maitland employees will be represented by the International Chemical Workers Union (AFL-TLC), whose Canadian district now claims a membership of more than 11,000. ICWU locals organized in Canada last year include those at Dominion Tar & Chemical, Montreal East; Electro Reagents Ltd., Beauharnois, Quebec; Vick Chemical, St. Thomas, Ont.; Vegetable Oils Ltd., Vancouver, B.C.; and North American Cyanamid plants at Niagara Falls and Beachville, Ont.

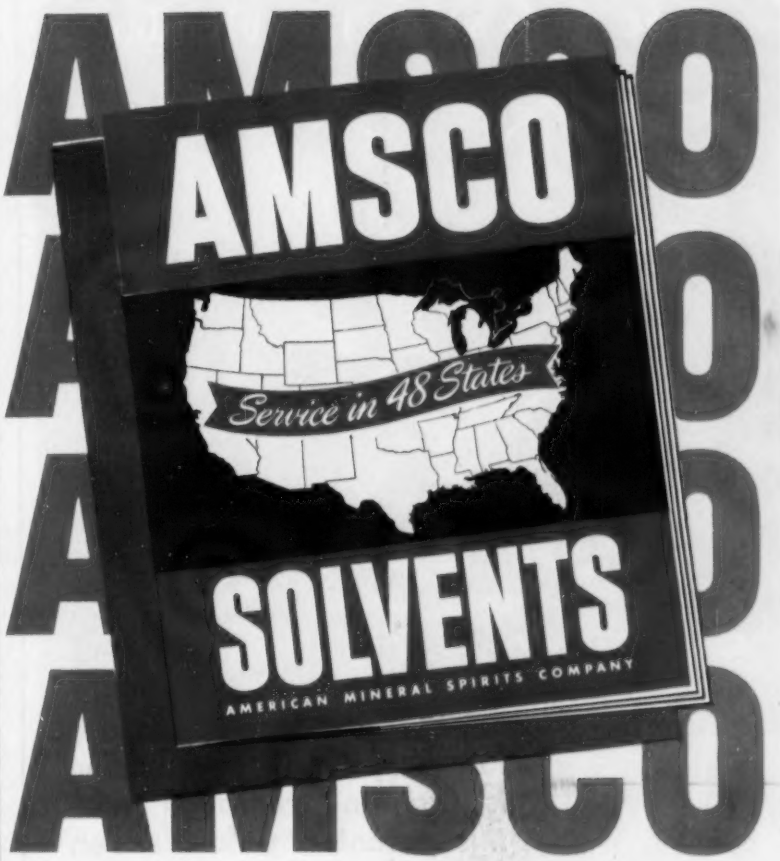
• In one major plant election, employees decided to steer clear of unionism. This was at Texas City Chemical Co., Texas City, Tex.

•

Fair Employment Talk: President Eisenhower's recently renewed pledge to the National Assn. for the Advancement of Colored People that he will do his utmost to bring about racial equality seems to have added impetus to the scattered movement for fair employment practices legislation.

• In Wilmington, Del., the city council has authorized the appointment of a committee on human relations, as recommended by Mayor August Walz. It is to study means of bringing about "better understanding in the fields of employment, education and social relations" among the citys' various racial groups.

• Even though Eisenhower has repeatedly stated that he's opposed to a compulsory FEPC plan, the Senate Labor Committee overwhelmingly approved a bill calling for that very thing. The bill, sponsored by Senators



Free guide for solvents

This handy, time-saving reference guide for selecting petroleum solvents is yours for the asking. It contains a comprehensive list of aliphatic naphthas, paraffinic hydrocarbons, and aromatic hydrocarbons and solvents together with their typical properties all condensed into a file-type folder for easy reference. Saves time—guards against buying errors. Send for your free copy today!

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NOW lab or pilot plant blending is fast and thorough with this patented p-k blender.

Here is a revolutionary laboratory blender—now complete with removable high speed intensifier bar. You get perfect blending, in shortest time, even with materials that tend to agglomerate. This versatile p-k lab blender is ideal for new product research, pilot plant blending and quality control analysis. Virtually all materials, regardless of varying densities, are quickly and easily blended. Stainless steel intensifier bar operates at pin-tip speeds up to 2200 fpm and can be quickly removed for cleaning or straight blending. Rotation of blender continuously supplies fresh material to pins, where high impact and shearing action breaks up lumps instantly, and disperses liquids into dry materials. Absolute uniformity can be obtained in 3 to 4 minutes. p-k lab blenders are available for immediate delivery from stock. Information available on all sizes up to 250 cu. ft. for production use. Write today.

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4-qt. size $245.

The p-k twin shell lab blender, with removable intensifier bar, will find ready use in process laboratories. Benefit from its use in your own operations. Shipped immediately from stock.

COMPLETE $245.00

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MOTOR DRIVES

Blender is driven by chain and sprocket drive by G.E. 1/20-hp gearhead motor. Intensifier bar by 1/12-hp motor with V-belt drive. Both motors for 110, single-phase, 60-cycle current ONLY. Separate toggle switch for each motor. Shell rotates at 32 rpm. Covers are dust tight, with Neoprene gaskets. Stainless steel blender shells available.

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p-k guarantees all materials and workmanship for one year from date of shipment.

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Please send descriptive literature.

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Complete information on all p-k twin shell blenders and accessories on request. Write today. 2566

WIDE WORLD

SENATORS HUMPHREY, IVES: From both parties, a maverick move for FEPC.

Irving Ives (R., N.Y.) and Hubert Humphrey (D., Minn.), is somewhat similar to another FEPC bill introduced in the House by Rep. Adam Powell (D., N.Y.)

• Michigan's state senate has passed a watered-down FEPC measure and sent it to the lower house, where it's expected to be bottled up in the same committee that previously had frozen a similar bill originating in the house.

•

Annual Wage Drive: Employers who have contracts with United Gas, Coke & Chemical Workers (CIO) might well prepare—now—to reply to questions that probably will be asked about the possibility of putting a guaranteed annual wage clause into the next agreement. At a recent "unemployment conference" in Gas-Coke's District 3 (New York), delegates recommended that all local unions fight for the guaranteed wage and voted to crusade for "a tax plan to provide full employment." The latter scheme, whereby federal taxes would be devised to encourage companies to undertake annual wage guarantees to their employees, no doubt will be more fully discussed at Gas-Coke's seventh constitutional convention, to be held Sept. 13-16 in St. Louis.

•

Intrigue in Unions: The American labor movement still is striving to end the left wing-right wing dissension that has weakened its bargaining power since World War II. Latest devel-

Cyanamid's

No. 2 of a series of advertisements

ACRYLO-NEWS

AERO* Acrylonitrile, though a highly stable chemical, is the most reactive of the vinyl monomers. It is so versatile that it can be used either as an intermediate in the preparation of dyes, pharmaceuticals, insecticides and other useful products, or by direct application in the broad fields of rubber, plastics and textiles. Its polymers and copolymers can be formulated to add many desirable properties to today's products and to create interesting new products. The following items and abstracts, gathered from many sources, indicate a few facets of current research with this versatile monomer.

☆ ☆ ☆ ☆ ☆ ☆

SURFACE COATINGS which yield crater-free films upon curing can be made by combining acrylonitrile with a polymerizably reactive alkyd resin, a catalyst, and a phenol-formaldehyde resin. The fine film properties are also applicable to laminating materials, molding compositions and other resinous products.

SYNTHETIC ACRYLONITRILE RUBBERS cured without sulfur result in exceptional aging properties. Hexamethylene tetramine used to vulcanize mono-olefins like acrylonitrile produces a resinous material, while copolymers containing higher ratios of diolefins form a rubber plastic.

MIXED DIALKYLAMINES from acrylonitrile find application as polymerization inhibitors, pharmaceutical intermediates and a variety of other uses. The reaction can be initiated by addition of a primary amine to acrylonitrile, alkylation, followed by thermal cleavage.

HIGH TEMPERATURE DYEING OF SYNTHETIC FIBERS decreases dyeing time considerably, permitting acrylic fibers to maintain tensile strength, color fastness and other characteristics equal to or better than results of normal dyeing.

THERMOPLASTIC MOLDING COMPOSITIONS can be formed by mixing a premilled acrylonitrile-butadiene copolymer with a thermoplastic resin such as a copolymer of acrylonitrile and styrene. The final products range in flexibility from those resembling soft leather to tough, hard, yet resilient molding compositions, according to the ratio of the constituents used.

(Some or all of the above items are covered by U.S. or foreign patents)

☆ ☆ ☆ ☆ ☆ ☆

Should you wish a more complete bibliography of current literature and new developments concerning acrylonitrile, we shall be glad to place your name on our mailing list.

As the pioneer producer of this exciting vinyl monomer, American Cyanamid has expanded its production facilities to assure users adequate supplies at low price. Write for technical assistance in your acrylonitrile research.

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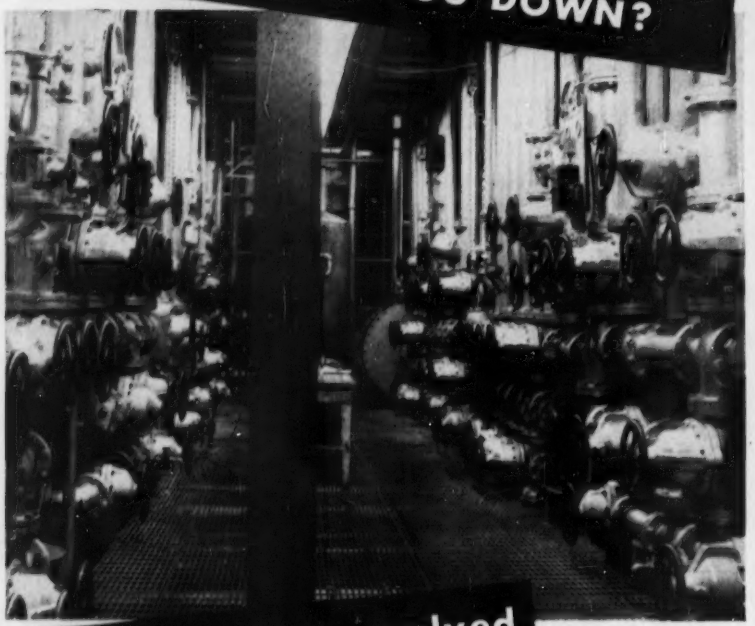

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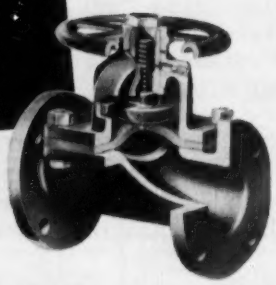

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V-11

UNION LEADER JANDREAU: Out of left-wing union, into a lawsuit scrap.

opments included efforts on the part of some local union leaders to swing their units out of left-wing camps and into non-pink unions; e.g., Local 301's Business Manager Leo Jandreau wants to lead some 20,000 employees of General Electric's Schenectady (N.Y.) plant out of the United Electrical Workers Union (Ind.) and into the International Union of Electrical Workers (CIO). Similarly, leaders of a Montana copper-mining local suddenly announced that they were through with the International Union of Mine, Mill & Smelter Workers (Ind.) and were casting their lot with the United Steelworkers (CIO). But in both cases, the two left-wing unions (both of which were ousted from the CIO for alleged Communist domination) are fighting these moves, and are charging that the local leaders are turn-coats motivated by selfish ambitions.

Blockade Snarl

Last week in Helsinki, the Finnish Government curtly refused a Polish demand that the Finnish shipping tycoon, Antti Wihuri, be turned over to Polish authorities to stand trial for "misappropriating a cargo of paraffin oil destined for Red China. Their contention: Wihuri was fully within his rights to sell the cargo at Singapore to the U.S.—"since the transaction was carried out in an emergency."

Interested chemical authorities, both in this country and in Great Britain, think the decision may well set a precedent for countries involved in the shipping of contraband materials behind the Iron Curtain, note

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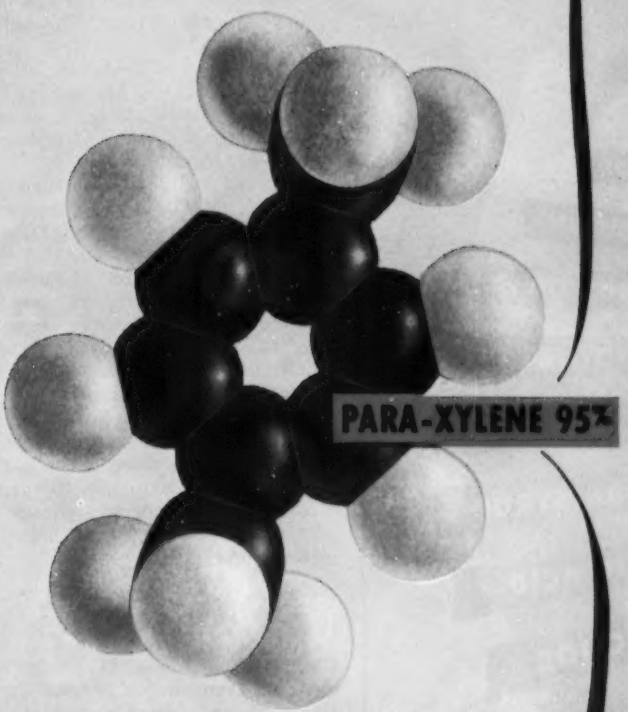

Chemical Synthesis Possibilities

Process	Product	Usage
Oxidation.	Terephthalic acid.	Formation of polyesters, polyamides, etc.
Oxidation.	Para-toluic acid.	Synthesis of dyes.
Oxidation.	Para-tolualdehyde.	Condensation with polyvinyl alcohol for adhesive resin.
Oxidation.	2, 5-Dimethyl-hydroquinone.	Stabilizing agent.
Oxidation.	Terephthalal-dehyde.	Resins by condensation with diamines or sodium acetate.
Oxidation and chlorination.	Tetrachloro-terephthalic acid.	Flameproof textiles.
Oxidation and chlorination.	Tetrachloro-para-toluic acid.	Alkyd resin modifier.
Chlorination.	Tetrachloro-para-xylene.	Dielectric, heat transfer medium.
Chlorination and hydrolysis.	Para-xylyl alcohol.	For xylyl phosphate. Waterproofing agent. Cellulose ethers.
Chlorination hot or in ultra violet light.	Para-xylyl chloride.	Lachrymatory.
Dichlorination at boiling or in ultra violet light.	Para-xylylene chloride.	Synthesis.
Chlorination and hydrolysis.	Para-xylylene glycol.	Modification urea - formaldehyde resins.
Chlorination in dark with iodine or iron as catalyst.	2-Chloro-para-xylene and 2, 5-Dichloro-para-xylene.	Solvent and/or intermediate.
Chlorsulfonation and reaction with ammonia.	Para-xylene 2-sulfonamide.	Aldehyde resins. Cellulose acetate solvent.
Nitration.	2-Nitro-para-xylene.	Solvent.
Nitration and reduction.	Para-xylidine.	Dyestuffs.
Dinitration.	2, 6-Dinitro-para-xylene.	Dye synthesis.
Sulfonation.	Para-xylene 2-sulfonic acid.	Intermediate.
Sulfonation.	Para-xylene 2, 5-disulfonic acid.	Dyestuffs.
Sulfonation and caustic fusion.	Para-xylenol (2, 5-xylenol).	Making dimethyladipic acid, antiseptics.
Acetylation in presence $AlCl_3$	2-Para-xylyl-methyl ketone.	Perfume bases. Pharmaceuticals.
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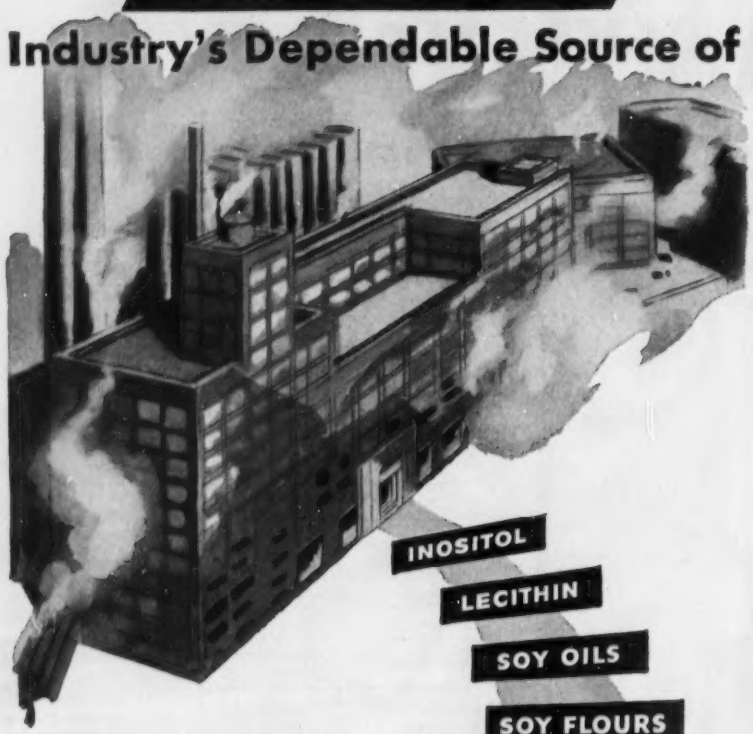

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that the Finnish Ministry of Foreign Affairs made its decision under heavy pressure from Finnish Communists.

Back of the acid exchange of diplomatic notes lies a high tale of adventure. In Nov. 9, '52, Wihuri contracted with the Polish organization, Polfracht, to carry to Shanghai in his tanker Viima, 10,000 tons of paraffins obtained from the Roumanian port of Constanza. The cargo was duly picked up: Wihuri collected his $300,000 (freight charges) from the Poles.

But as the Viima was approaching Far Eastern water, Wihuri became increasingly dubious as to the advisability of running the Chiang-Kai-shek blockade, received permission to make his delivery at a South Chinese port instead of putting in at Shanghai. Several weeks later (spent running up and down the coast) Wihuri became heartily sick of the whole affair, in desperation docked at Singapore—and sold his cargo to the U.S. Government —for trans-shipment to Korea.

For some months, the situation remained dormant; then last November the Polish Government sent a sharp note to Finland demanding that Wihuri be brought to trial. (Conviction would mean 2 years at hard labor.)

Since then diplomatic channels have buzzed with the affair; Finnish industrials are demanding Wihuri be protected; the Polish Minister in Helsinki is clamoring "for justice."

Latest attempt to smooth the waters: the Finnish Government is advising the Polish consignors that reparations for the "necessary change in port of call" can be sought before a civilian court.

KEY CHANGES . .

Christy H. Madsen, to production manager, Naugatuck Chemical Div., United States Rubber Co., Naugatuck, Conn.

Eilie Bergesen, to general manager, Western Chemicals, Inc., Portland, Ore.

Norman H. Callner, to chief project engineer, Compressed Gas Div., The Liquid Carbonic Corp., Chicago, Ill.

Paul Kendall, to chairman of the board, and **Lee H. Clark,** to president, Sharples Chemicals, Inc., Philadelphia.

L. W. Jordan, to vice-president, Pacific Region, Linde Air Products Co., San Francisco.

William F. Phillips, to assistant manager, Miscellaneous Chemicals Dept., American Cyanamid Co., New York.

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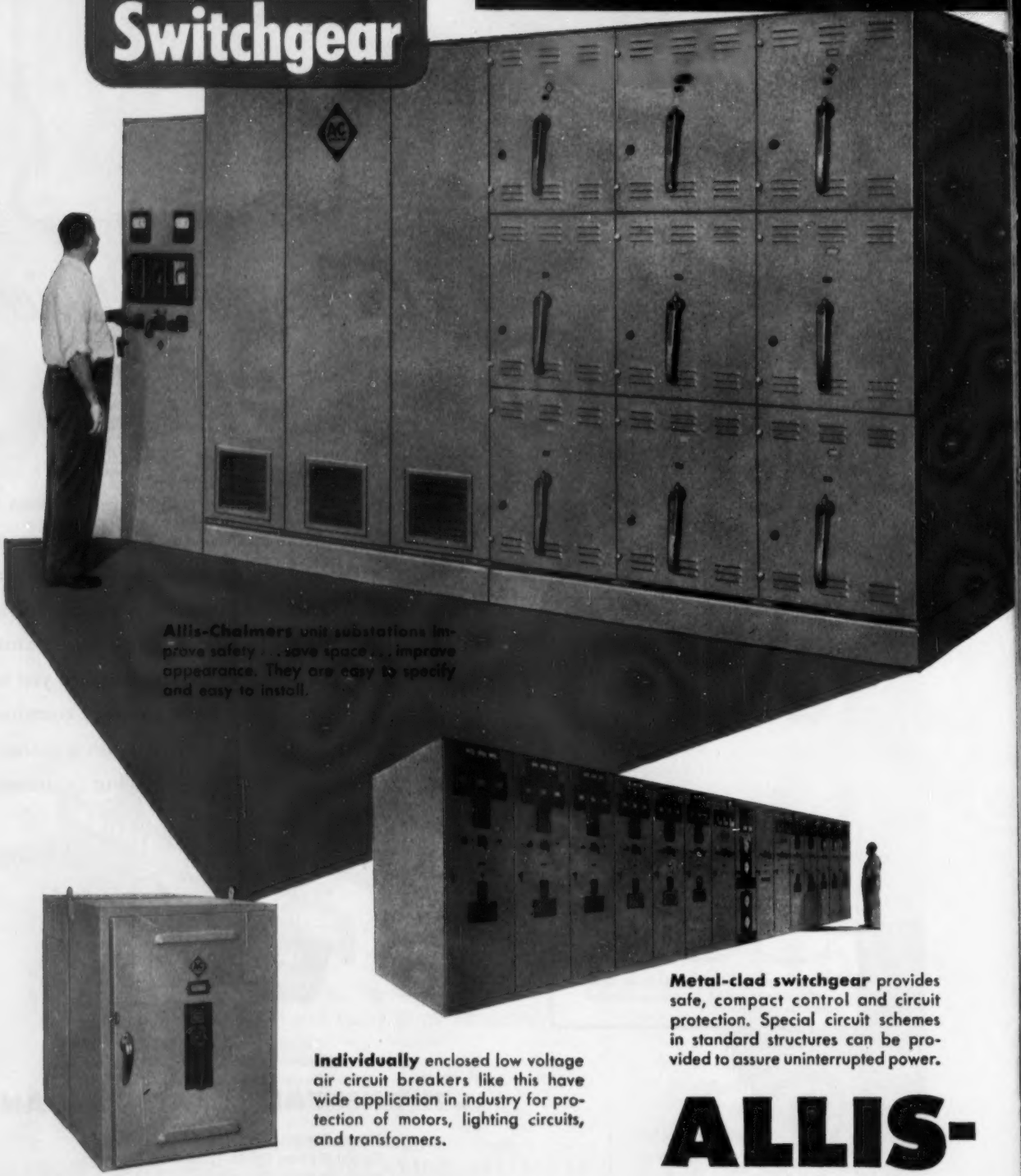

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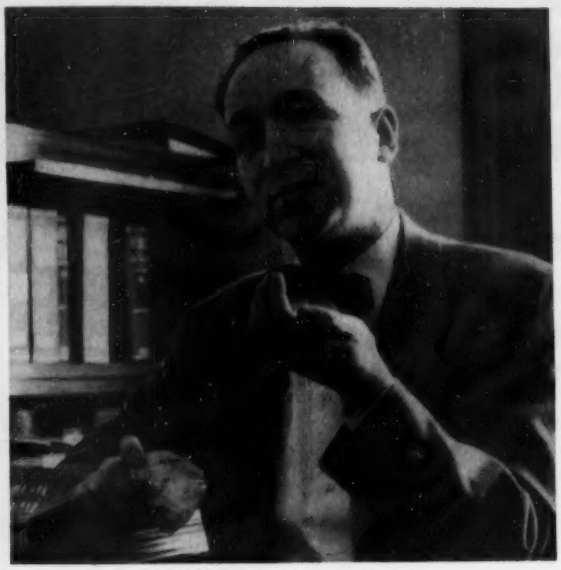


CHEMICAL ENGINEER SCHWARTZ: "The ideas are worth millions . . .

A Lesson in Thrift

After a whirlwind 7,000 mile cross-country tour of the nation's top sulfur producing and consuming plants, chemical engineer Seymour Schwartz recently returned to his New York consulting office a bit weary but wiser in the ways of sulfur handling practices, concluded that both brimstone producers and consumers still have a lot to learn.

Admittedly, says Schwartz, more aggravating than any lack of knowledge is an apparent lack of desire. Plant managers and supervisors seem overcome with inertia at any suggestion of changing their well-established procedures for a mere $5,000 annual saving here and there. But sulfur is a major commodity and whether these men realize it or not, Schwartz continues, that old adage of saving your pennies and the dollars will take care of themselves really applies in the sulfur business. Tying up all the loose ends from brimstone mining to processing, he estimates, would net industry almost $20 million/year.

"By tightening up its sulfur handling operations, industry can save itself $20 million/year."

In spite of this golden pot at the end of the rainbow, says Schwartz, industry still isn't eager to police its sulfur handling practices, doesn't believe an outsider can tell it anything about sulfur. But after nine years of trouble-shooting at some of the world's leading sulfur recovery plants and sulfuric acid works, he feels there is a lot he can say.

"Most potential sulfur savings are unspectacular—a few pennies here and there—but sulfur is a big commodity and the dollars add up fast."

Ways to Save: Schwartz concedes that in view of the recent price rise for crude sulfur, industry is becoming more price conscious, looking for shortcuts and ways to tighten up their sulfur operations. Some savings are obvious to any supervisor willing to walk around his plant, watching material flow and keeping an eye on the

. . . to management looking for ways to cut corners."

flues. Other savings are less obvious but easily demonstrable. Among these:

• Substitution of heavy equipment for dynamite in breaking up sulfur piles prior to shipment. This would save 2¢/ton; $3,500/year in a 500 tons/day operation.

• "Skinning" sulfur stockpiles by forming an outer skin of solidified sulfur over the inner pile of crushed material. A small portable weed burner and a little kerosene make up the total investment, while the resultant savings could eliminate $1 million/year in industrial losses due to windage and contamination.

• Transport and storage of sulfur as a liquid instead of as a solid would eliminate both of the previous losses,

"Now, slightly pinched by higher crude prices, management is becoming sharper-eyed, is starting to look for ways to cut corners."

save industry an estimated $3 million on material alone; savings on labor would double that. Actual return on investments for any needed additional facilities would average 85%.

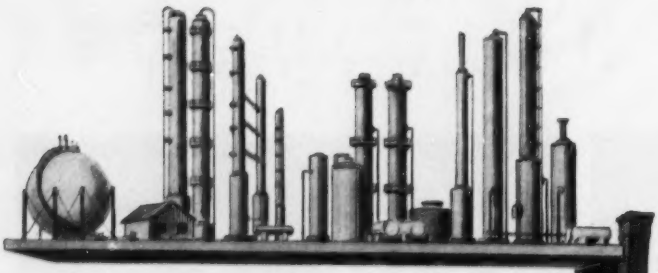
• Improvement in processing techniques could save sulfur users about $2 million/year. Installation of flue recovery units, special filters and spray eliminators, chromium-aluminum plating of the insides of flues all tend to cut down on operating costs.

Taking about 75% of all crude sulfur produced, the sulfuric acid industry in particular, declares Schwartz, could realize large savings. Most sulfuric acid plants convert only about 92% of SO_2 into SO_3, could up this conversion to 97% with only a minimum of trouble and expense. One 200 ton/day Louisiana sulfuric acid plant boosted its conversion efficiency from 92% to 97%, saves $56,000 a year.

"Some savings are obvious to anyone willing to walk around a plant with his eyes wide open; many are less obvious but easily proved."

Too, substitution of a larger particle-size catalyst could save acid plant operators $15,000/year just through reduction in power costs. Additional savings on power can be realized in those plants having hot gas filters by using catalyst beds in place of the filters.

Pinpointed: There are many angles, according to Schwartz, to this cost cutting, to eliminating all the needless waste and expense in sulfur handling



Production costs going sky high ?

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Typical example: The management of a large manufacturing company asked SD for a check-up on their organic chemicals process, to see if production costs might be reduced. SD soon came back with the answer — a few strategic changes, at merely nominal capital investment, which raise the capacity of the existing plant at least 20%.

By consulting with SD you, too, may discover relatively easy ways to cut costs on present or contemplated plants. SD is equipped to take full responsibility, from preliminary economic evaluations to initial operation, whether the problem involves an SD process, one of your own, or one to be procured or developed.

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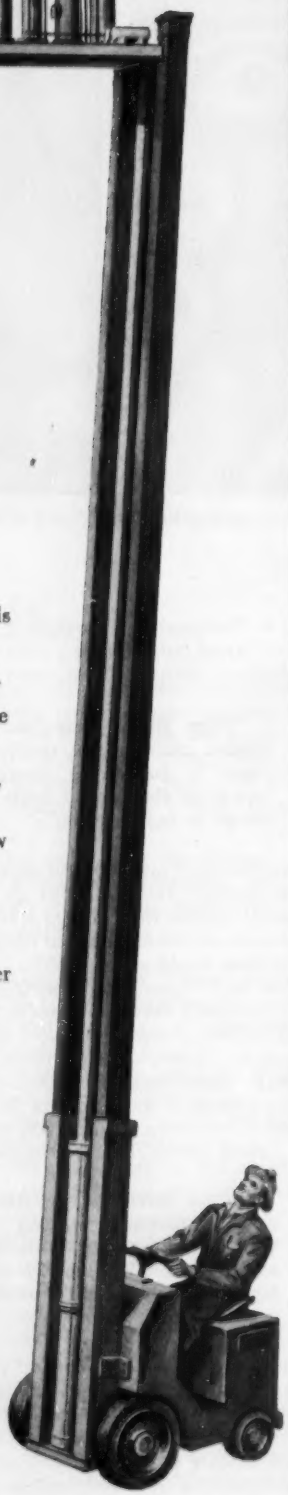


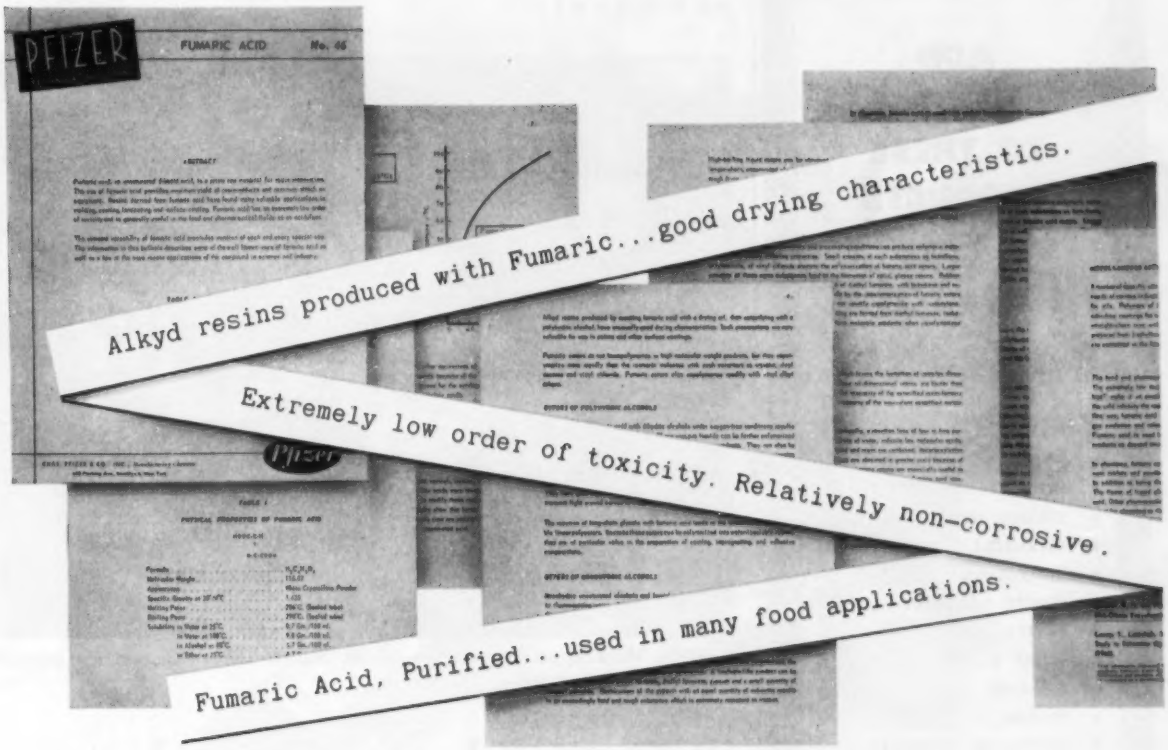
"Inertia is the force of rest, and there appears to be a great deal of it in those industries dealing with sulfur."

and processing. But convincing management is a hard-sell proposition unless it can be pinpointed with facts and figures.

One company could realize over a quarter million dollars a year in sulfur savings, yet had to be shown where. After taking a close look at operations, Schwartz did some calculating, flushed a covey of cost-cutters:

- Adoption of liquid sulfur transport would reduce annual outlay by $100,000.
- Raising acid conversion efficiency 2% would pare operating expenses $40,000/year.
- "Skinning" storage piles would drop wind and contamination losses $10,000/year.
- Storing and melting sulfur on outsized hot-plates would save over $30,000/year.
- Adding additional catalyst to sulfuric acid converter would recoup nearly $15,000 sulfur and acid every year.
- Switching to spent oxide (waste product from coal-to-gas operations) as a sulfur raw material in one of the operations would boost profits $80,000/year.

As great as this potential saving is, Schwartz doesn't believe it is out of line with those obtainable in numerous other sulfur plants throughout the country. But as he emphasizes, plant managers and area supervisors are overcome with inertia at the suggestion of reworking well-worn procedures. Says he: "Inertia is the force of rest and there is a great deal of it, especially in the sulfur field."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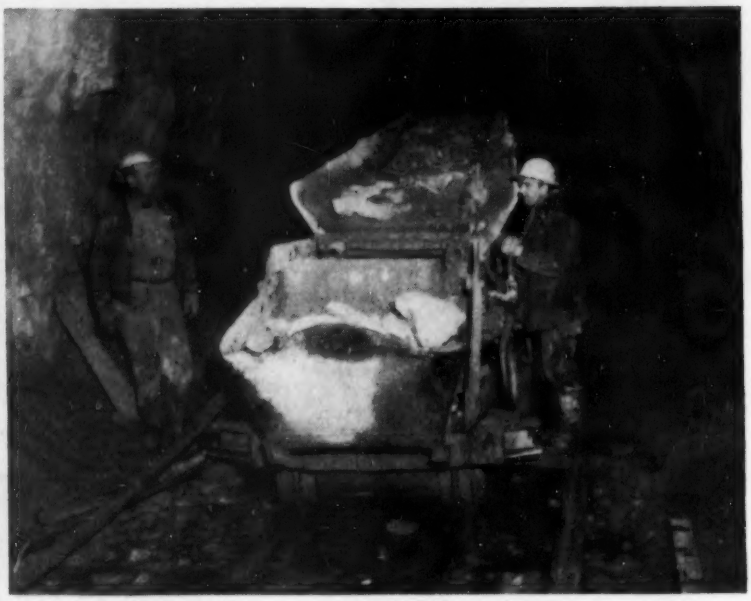

UNDER: Mucking machinery removes rock ballast. These chambers are destined for use in storing propane.

Staggered and Stored

National Petro Chemical, the joint enterprise of National Distillers and Panhandle Eastern Pipe Line Co., is making use of both under- and aboveground storage at its new plant in Tuscola (Ill.). In the pictured underground operation, mucking machinery is shown removing rock ballast from chambers approximately 350 ft. below grade. These chambers have a total capacity of 150,000 bbl., will be used for the storage of propane at approximately 220 lbs. pressure.

The fifty-five storage tanks aboveground are also used for propane. They're 113½ ft. long; 9⅓ ft. in diameter. The reason for their staggered positioning is fairly obvious, but it's something that's often overlooked in the process industry. Should the end of one of the tanks blow off, it will not compound the damage by hitting the other units. Each tank weighs 75 tons empty, is capable of holding approximately 56,000 gal. Design pressure is 200 lbs.

The idea for the staggered storage tanks was the contribution of Arnold Belchetz, the Larchmont (N.Y.) engineer who was consultant for the Tuscola plant. As he points out, the concept is a simple one: if one of the tanks should blow up, the flying end would make a dealy projectile. But because of the positioning, it would not be likely to hit another one, would thus reduce the danger of setting off a chain reaction.

OVER: While aboveground, propane tanks are staggered for safety reasons. Should an end blow off, it would not hit another tank.

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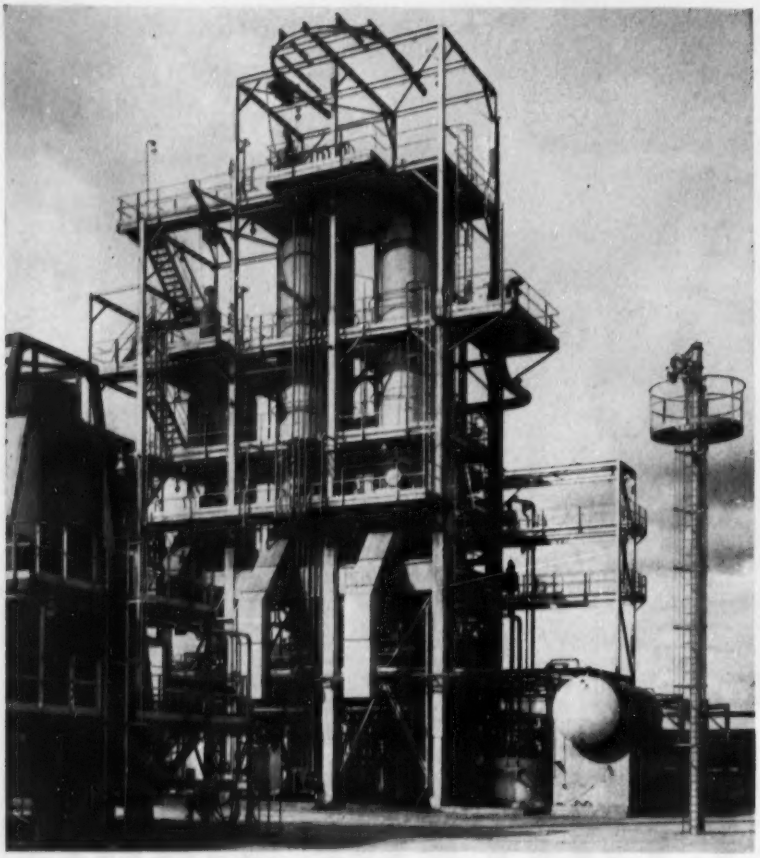

uses Stainless Steel Vessels

The phosphoric acid plant at the Scottish Oils Ltd., Grangemouth refinery has two 9-ft. 3-in. diam. by 38-ft. phosphoric reactors and an 8-ft. 6-in. diam. by 22-ft. catch pot which were built and shipped from our Birmingham, Alabama plant. All three vessels are made of ASTM-A-240, Grade M, Type 316, modified stainless steel. Several other types of steel and alloys were used for heads, fittings and piping connections and a number of internal grid plates are made of solid nickel.

The handling of such a variety of metals calls for production experience, skilled personnel and complete shop facilites. Chicago Bridge & Iron Company is equipped to handle all types of corrosion-resistant metals, clad steels and alloys. We have facilities for stress-relieving and x-raying structures and for the descaling of fabricated steel plates by the Horton Pickling Process.

When planning welded steel plate structures of carbon steel, stainless steel or alloys, write our nearest office for estimates or quotations. Let Chicago Bridge & Iron Company engineers help you select the structures best suited to your needs.

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PRODUCTION. . . . .

Push for Power

To the surprise of many last week, Duquesne Light Co. of Pittsburgh stepped up to play an important role in the Atomic Energy Commission's proposed first full-scale central nuclear power station (*CW, Mar. 20*). The firm's offer was the best of nine major ones for the job, should save the government $30 million in construction and operating costs. It means that in the field of power from the atom, the electric firm now has one foot firmly in the door.

The AEC makes it plain that the first plant "is not expected to produce electric power at costs competitive with power from conventional fuels." Rather, it says the whole idea is to "gain more design and technological experience than could be obtained otherwise, such as from a smaller plant, and to provide cost estimates for the future."

The reactor employed will be a Pressurized Water Reactor (PWR), which will be cooled and moderated by ordinary water under pressure. It will work on slightly enriched uranium as fuel. The reason for the choice of reactor: research and development on it are more advanced than on other types. Westinghouse, for instance, which is developing, designing and constructing the reactor portion of the plant, has done a lot of work on a similar reactor for the atomic submarine, *Nautilus*.

When it's completed, the reactor should generate enough heat to produce a minimum of 60,000 kw. (in addition to the electricity required to run the plant itself.) But AEC reports that the actual capacity may be somewhat greater than the minimum, so Duquesne will build the generating plant with some reserve capacity.

Site for the plant, as yet undisclosed, will be on land presently owned by Duquesne somewhere in the Greater Pittsburgh area.

EQUIPMENT. . . .

Flexible Recorder: Separation into three distinct units is the angle Bristol Co. (Waterbury, Conn.) is playing up on its new Metagraphic recording system. The transmitter, receiver and controller are packaged individually, can be installed separately at the process points where each operates best.

•

Safety Cut-off: Minneapolis-Honeywell Regulator Co. (Philadelphia) is offering a new additon to its millivolt

Q. *Could chemical science develop a substance offering more durable protection against moisture for fabrics, leather, masonry and many other materials?*

A. MOISTURE JUST ROLLS OFF THIS INVISIBLE "FILM"

ANOTHER EXAMPLE OF

CHEMICAL PROGRESS

They're calling textile water-repellents made with G-E silicones "*Super Silicones*" – perhaps the greatest surface protection against damp and wet that chemistry has ever searched out.

If you have seen rain splat against a "Super Silicone" Cravenette*-processed garment, for example—and stand in quivering droplets instead of sinking in—you've seen silicones in action.

Now, textiles, masonry, leather, glass, and wood can stay dryer and live longer. Now, too, G-E Dri-Film® water-repellent-treated electric motors, fluorescent lamps, and many other industrial products can stand more punishment.

For besides repelling moisture, G-E silicones resist weather, shrug off heat or cold, are unaffected by many common chemicals and solvents.

Thus, another development of G-E chemical research, originally conceived in the search for better electrical insulation, now makes new contributions to American business and industry.

This is progress for all—through G-E Chemical Progress.

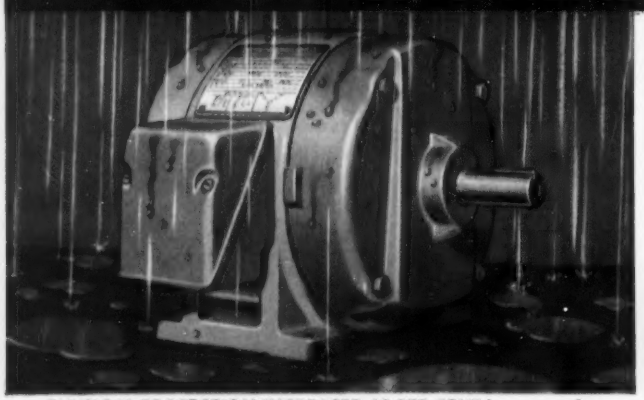
*Reg. trade-mark of the Cravenette Co.

FOR NEW DEVELOPMENTS in Silicones, Plastics Compounds, Electrical Insulating Materials, Industrial Resins and Varnishes, Plastics Laminating and Molding... write for new "G-E Chemical Products" Booklet (CDG-101) to *CHEMICAL DIVISION, General Electric Company, Section 400-1B, Pittsfield, Mass.*

You can put your confidence in—

GENERAL ELECTRIC

YOU GET EVEN LONGER MOTOR LIFE



PHYSICAL PROTECTION INCREASED 60 PER-CENT by a complete redesign of cast-iron frame and end shields. This motor is suitable for many jobs where ordinary dripproof motors should not be applied.

EXTRA ELECTRICAL STRENGTH is assured by use of new polyester film insulation. A silicone coating, Dri-film,* virtually eliminates stator insulation failure caused by moisture.

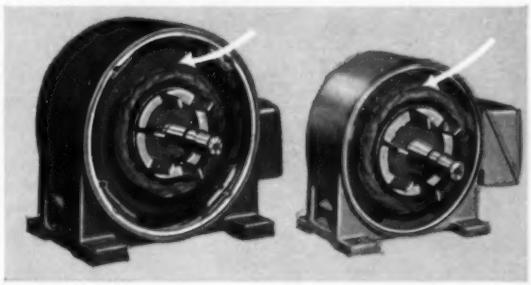
*REG. U.S. PAT. OFF.

TRI-55 CLAD THE LEADER IN MODERN MOTOR DESIGN

GENERAL ELECTRIC ANNOUNCES...

THE ALL-NEW TRI 55 CLAD MOTOR

REG. U.S. PAT. OFF.



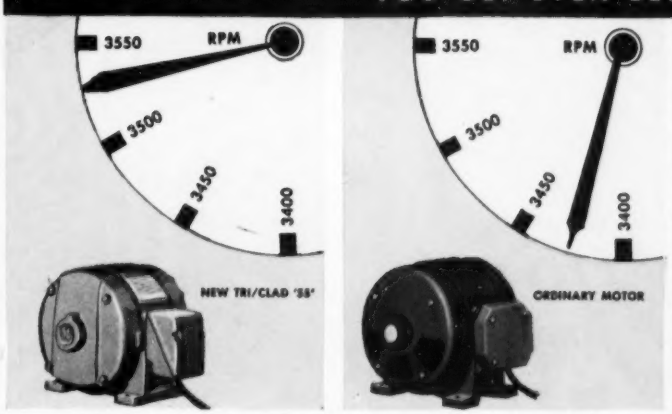
LIGHTER, SMALLER Tri/Clad '55' motors have been made possible through better use of space within the frame. Active materials (magnetic steel, copper) have not been sacrificed.

Complete Line of Dripproof, Enclosed Motors and Gear-Motors Available in Most Ratings in 1954

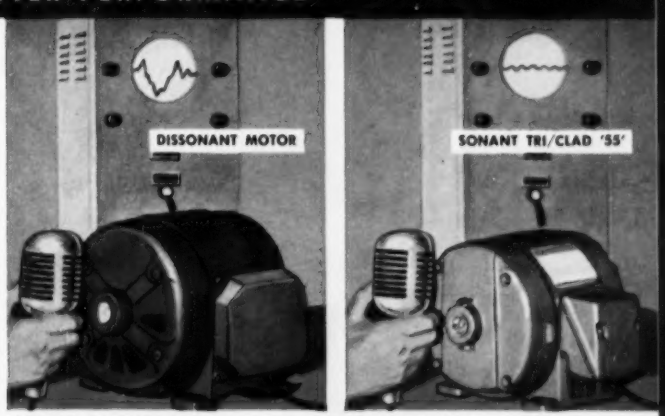
Here's the all-new Tri/Clad '55' motor — now available in NEMA 182 and 184 frame sizes.

You can get complete information on this dramatic motor achievement by writing for bulletin GEA-6013 on Tri/Clad '55' Dripproof motors, GEA-6012 on Tri/Clad '55' Enclosed motors, or GEA-6027 on Tri/Clad '55' Gear-motors, or by contacting your nearby G-E Apparatus Sales Office or G-E Motor Agent. General Electric Company, Section 648-1, Schenectady 5, N. Y.

YOU GET EVEN BETTER PERFORMANCE



HIGHER FULL-LOAD SPEEDS is only one of many improved characteristics of this new G.E. motor. Above shows comparison of an ordinary motor with the Tri/Clad '55' — both rated at 3600 rpm.



SONANT OPERATION of the new Tri/Clad '55' motor has been laboratory tested and proven. Motor operates at reduced noise level, and operating sound is pitched to a more pleasant frequency.

YOU GET EVEN MORE INSTALLATION AND MAINTENANCE SAVINGS

NEW BEARING SYSTEM allows this motor to run longer than other motors without regreasing. One reason—greatly improved synthesized grease with 8 times the mechanical stability of ordinary grease.

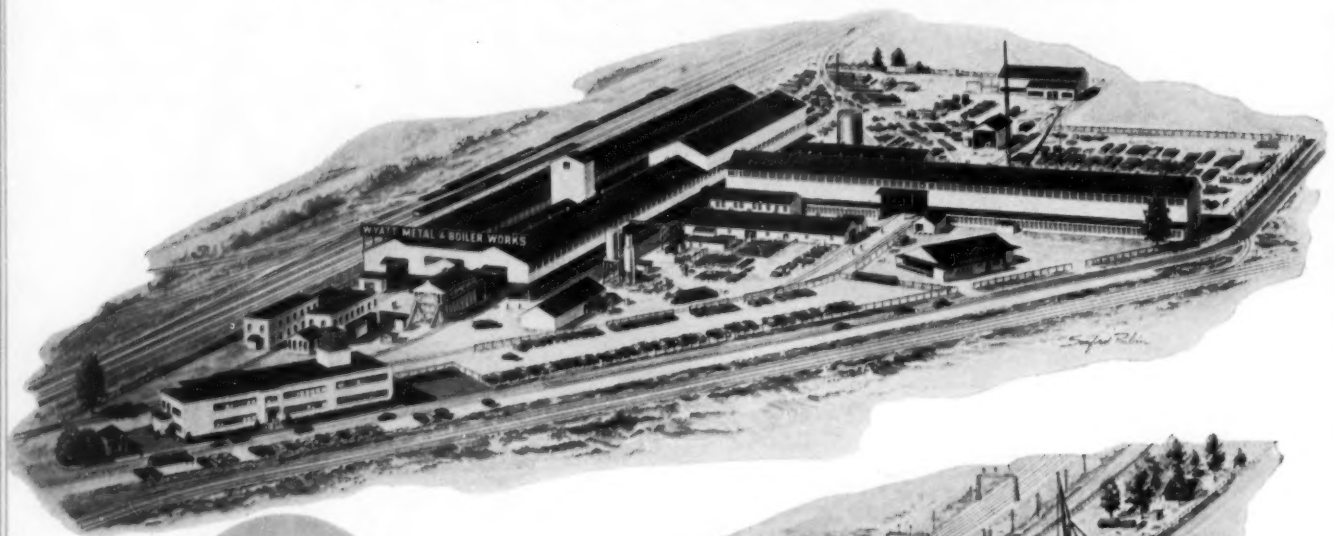
EASIER TO SERVICE, the new Tri/Clad '55' has larger conduit box diagonally split for simplified wiring. Perma-numbered leads mean that even clipped and stripped wires are instantly identified.

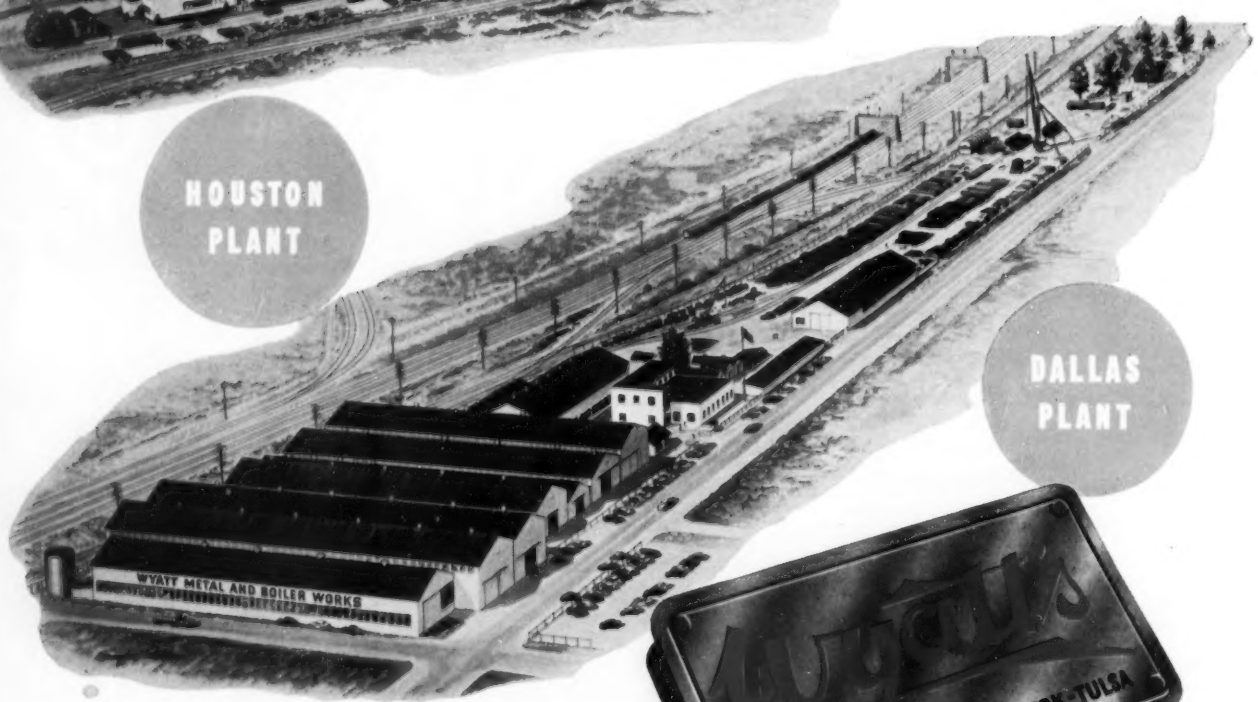
Progress is our most important product

GENERAL ELECTRIC

Workshops...

for the Petro-Chemical Industries





STEEL PLATE FABRICATORS AND ERECTORS SINCE 1913

pyrometer controls. Designated Protect-O-Vane, the auxillary controller shuts down operations when temperature goes too high or when instruments or power fail. The unit is being incorporated into new controls, can be added to existing controllers.

•

Magnetic Drive: In order to facilitate removal of agitators from reactors, Stainless & Steel Products Co. (St. Paul, Minn.) has developed a chemical reactor with a magnetic clutch. The clutch separates the agitator from the drive, permits it to be removed for cleaning with a minimum of trouble.

•

Pipe Dope: The new Flexrock 25 Teflon pipe dope, claims maker Flexrock Co. (Philadelphia), is a biologically inert, easily applied thread sealing compound with high chemical resistance and good adhesion characteristics. Recommended for use on chrome, chrome plate, nickel, steel, ceramic and plastic pipe threads, the compound, says Flexrock, prevents galled threads and permits easy pipe joining because of its lubricating qualities. Price: $5 for a 4-oz. can.

•

Conveyor Support: A new portable support, Speedtrux, for use with gravity conveyors is now rolling off production lines at Speedways Conveyors, Inc. (Buffalo). Easy to set up or dismantle, the unit is averred to be capable of holding a 10-ft. section of gravity-wheel or roller-type conveyor plus the maximum load of either.

•

Sensitive Relay: High flexibility and sensitivity are the claims of Chicago Apparatus Co. (Chicago) for its new electronic relay. The unit controls loads of 15 amps. AC with an input current of less than 5 microamps. Suggested applications: temperature, pressure and liquid-level controls, alarm systems, and photoelectric counting.

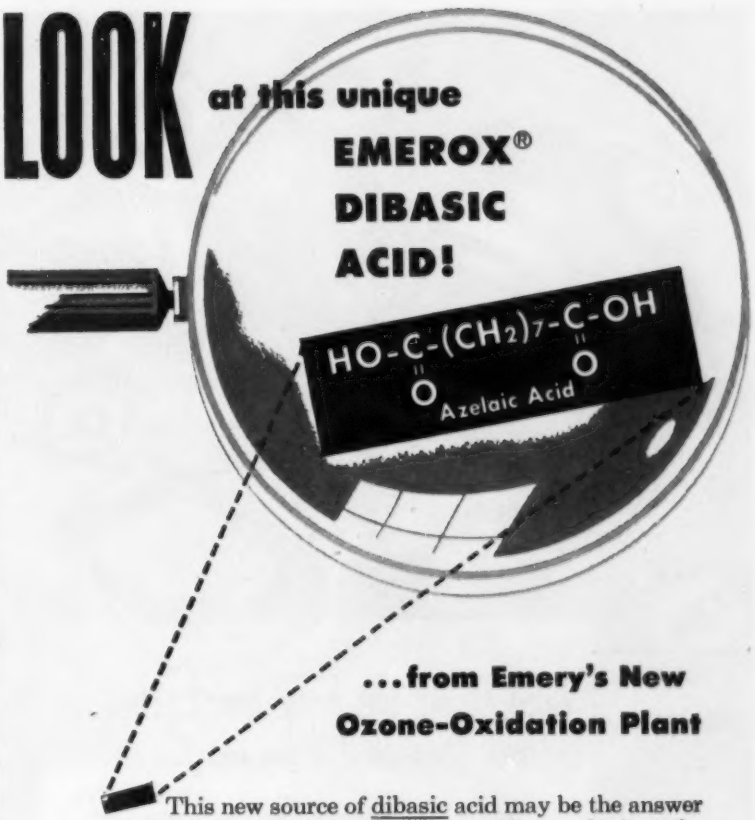
•

In Brief: Fisher Scientific (Pittsburgh) is off the press with its revised API Gravity-Temperature Correction Tables. The tables are in chart form, measure 45 in. x 35 in., include new ASTM values and sell for $1 each.

• Taller & Cooper, Inc. (Brooklyn, N.Y.) now has available two bulletins describing the firms new gas analyzers. One pamphlet covers T & C's hydrogen analyzer; the other covers the firm's carbon monoxide detector.

• Penn Industrial Instrument Corp. (Philadelphia) is offering for the asking its new catalog 1027. Subject matter: Penn's tilting U-tube mechanical flow meter.

LOOK at this unique EMEROX® DIBASIC ACID!



...from Emery's New Ozone-Oxidation Plant

This new source of dibasic acid may be the answer to one of your tough problems . . . or it may be just the right chemical intermediate for that unusual application you've been thinking about.

Already it has unlimited potential use in plasticizers, alkyd resins, polyesters, polyamides, and synthetic lubricants. Further utilization as an economic replacement for higher-priced dibasic acids is also unlimited.

Take a look at the typical characteristics and composition of EMEROX 1110 Azelaic Acid:

Acid Value	560
Combining Weight	100
Melting Point	95-99° C
Color, F. A. C.	7
Specific Gravity @ 110° C	1.038
Azelaic Acid Content (C_9)	87%
Other Dibasic Acids	13%

As a result of Emery's revolutionary ozone-oxidation process, EMEROX 1110 Azelaic acid is now available in commercial quantities.

Check this unique dibasic acid today — send for samples — mail coupon for literature!

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Along the B&O are *good* plant sites to choose from, in the economic atmosphere for profitable production. Our Industrial Development men can guide you to the *best* site for *your* purpose. Let us weigh *your* factors and prepare a special study for you. No obligation involved!

We have helped many leaders of industry find profitable plant sites... and some come back for more! For your own guidance, *ask our man!*

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Cincinnati 2	Phone:	DUnbar 2900
Chicago 7	Phone:	WAbash 2-2211

Baltimore & Ohio Railroad

Constantly doing things—better!

PRODUCTION. . . . .

• Ladish Co. (Cudahy, Wis.) has just published its new fittings catalog and piping handbook. Of interest to those with process piping problems, the handbook tabulates material specifications of most metals commonly used in piping systems.

• Graver Water Conditioning Co. Div., Graver Tank & Mfg. Co., Inc. (New York) explains in its new WC-114 bulletin how to save boiler plant fuel and labor costs by means of continuous boiler blowoff heat recovery equipment.

•

Clean Sweep: Designed especially for the chemical and allied industries, Fuller Brush Co.'s (Hartford, Conn.) new lightweight push broom, Blade Sweep, features acid and heat resistant bristles. Claimed to last much longer than ordinary brooms, Blade Sweep comes with an optional metal scrapper for removing well-packed deposits.

•

Adjustable Power: Summit Electronics, Inc. (Summit, N.J.) is now marketing a new adjustable AC power supply unit designed to operate from a 60-cycle AC line. Output voltages, controlled from a simple front panel, can be varied from 0.1 to 100 amps.

•

Triple Threat: The new Com-Bin Feeder, says manufacturer Pulva Corp. (Perth Amboy, N.J.), now acts as a crusher as well as a surge bin and feeder. Formerly used to store and meter out difficult-to-feed material such as sticky press or centrifuge cakes or dry solids tending to clog a conventional hopper, the unit now can crush up to 1,500 lbs/hour of material.

•

Continuous Dryer: Surface Combustion Corp. (Toledo, Ohio) is now marketing a new high-speed, continuous, low-temperature dryer. Available in standard sizes ranging from 100 lb/hr. to 2,000 lb/hr., the dryer consists of Kathabar dehumidification equipment, an air distribution system and conveying units for handling raw material. The dryer provides needed low relative humidity by dehumidification of the air instead of raising temperature of the air.

•

Gas Meter: Working on the principle of positive displacement, the new Bennett gas volume meter, claims maker J. J. Monaghan Co. (Denver, Colo.) will accurately measure the volume of any gas passed through it. The meter is pocket-sized and easy to read.

Dependable Source for Chemical Raw Materials

President George E. Wilson (right), of the G. E. Wilson Co., shows J. H. Bahlburg, Wyandotte representative, the first completed unit of his company's facilities being erected at Providence Municipal Wharves, Fields Point, R. I.

"We have enjoyed 25 years of growing with Wyandotte"

— George E. Wilson, President, G. E. Wilson Co.

The G. E. Wilson Co., Providence, R.I., was one of the pioneers in handling liquid caustic in tank cars. "Our new facilities at Providence Municipal Wharves will offer many advantages to both our customers and ourselves," says George E. Wilson, President. "In addition to advantageous incoming water shipment, we have a more convenient location and sufficient room for further expansion."

The George E. Wilson Co. has been a Wyandotte customer for more than 25 years. "We use Wyandotte Caustic and Chlorine in the manufacture of hypochlorites," Mr. Wilson says. "We also distribute them to others. We consider Wyandotte an excellent source of supply — more than once they helped us over the hump in times of short supply. Wyandotte has always been known for quality . . . since bringing in their new facilities, we are certain that no one can exceed them in quality. Today, the impurities in our finished products are infinitesimal . . . in fact, the stability and quality of our products are at an all-time high."

Do you use chemical raw materials in your processes or products? If so, let us quote you on your requirements. Remember, Wyandotte service is helpful and far-reaching, and Wyandotte representatives are constantly working with industries like yours, to cut costs and create product improvement. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

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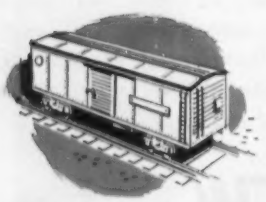
HEADQUARTERS FOR ALKALIES

Soda Ash • Caustic Soda • Bicarbonate of Soda • Chlorine • Calcium Carbonate • Calcium Chloride • Glycols
Synthetic Detergents • Agricultural Insecticides • Soil Conditioners • Other Organic and Inorganic Chemicals

STOP BAG SLIPPING WITH...

Hudson's New

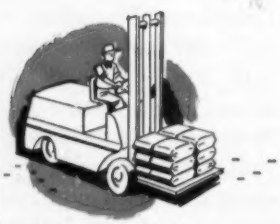
Unique "Bowling" trials show slip-resistance of Hudson Inks . . . Hefty two-hundred pounder slides equal weight multi-wall sacks down alleys with full force. Bag in left foreground with Hudson's new NON-SLIP INK stops in 20-ft. Ordinary sack (right) skids full length of alley for a strike. Here's proof-positive of NON-SLIP INK'S gripping power.



We humped a freight with *half* a carload . . . *not a single Hudson Non-Slip Ink* sack slid or broke!

Do you ship by truck? Buy Hudson Bags with Non-Slip Ink and watch your "Slip-break" losses shrink!

Non-Slip Ink puts an end to sacks sliding under their own weight and falling apart like a house of cards!



Sudden stops no longer mean sudden losses from bags that slip, slide and break!

Non-Slip Ink!

...at no extra cost!

Takes Skid Out of Your Bags!

Again Hudson puts your shipping problems "in the bag" for you . . . with this exclusive, specially developed NON-SLIP ink.

What's more, there's NO EXTRA charge for this ink! Stack this up with all the other superior features of Hudson multi-wall sacks and you know you're buying the best bags money can buy when you make the order out to *Hudson!*

Here's Why:

Best Protection — cuts package loss caused by slipping — Takes rough handling in transit! Hudson strongest by far!

Less Re-Handling — because slipping in packing and storage is virtually eliminated — No double handling.

Free Moving — designed for perfect handling on chutes and conveyors.

Labor Savings — easier and faster to handle — No fumbling with Hudson's "Sure-Grip Multiwalls."

Send for complete story today!

HUDSON PULP AND PAPER CORP.
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Yes! **We'd like the whole story on Hudson's new NON-SLIP INK.**

NAME_____ TITLE_____

COMPANY_____

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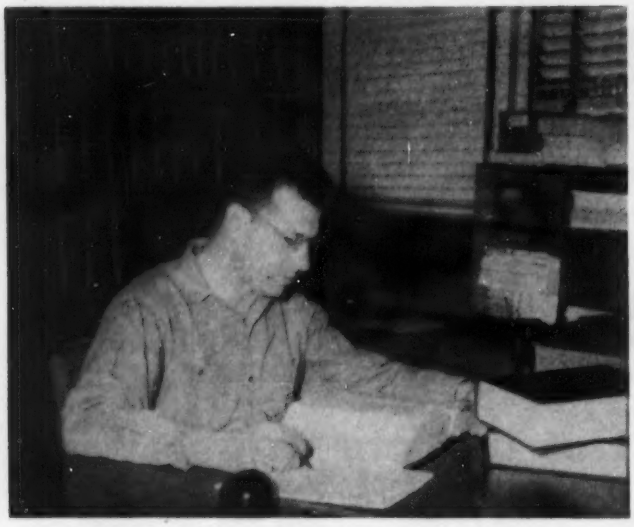
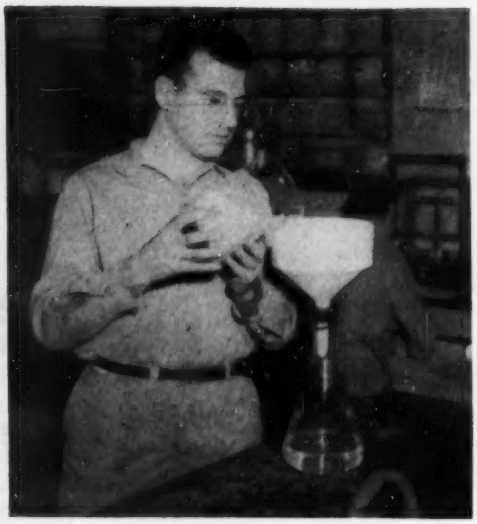




CLOSETED with inorganic tomes (*left*), Packer launches cobalt hydroxide study in library, later switches locale to lab.

At Work: Jack of All Trades

Every alert management man quickly learns that keeping a researcher happy means keeping him informed. It's a two-fold task: show him exactly how his effort fits into the development of a new product or process; let him know how the finished project fares commercially.

By rights, then, Witco Chemical Co.'s research chemists should be among the happiest anywhere. A Witco researcher who originates a project often steers it clear through the pilot stage and into plant production. He may even be called upon for technical service after his brainchild dons its commercial swaddling clothes.

Obviously, this plan calls for well-rounded staffers—scientists who have better than a nodding acquaintance with engineering principles. Out of a research and development group numbering 26 at Witco's Chicago laboratories, about 18 are available for these broad-gauge assignments.

One such jack-of-all-trades is chemist Howard Packer. A little more than a year ago, Packer had an idea for an improved cobalt hydroxide that wouldn't change color, become less reactive in storage. How he nursed it to commercial realization is shown on these pages.

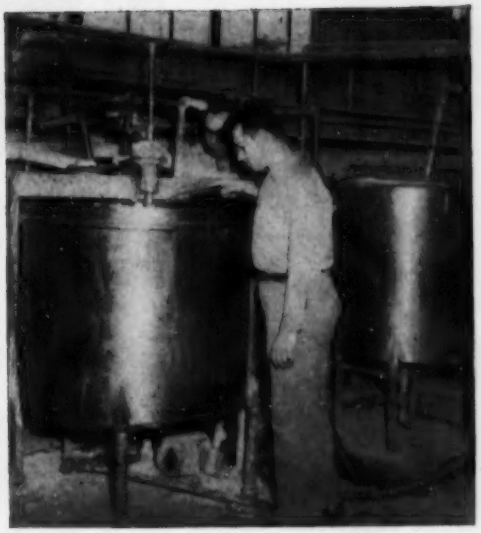
Last week, researcher Packer closed the book on cobalt hydroxide (though he may have to make several more technical service calls). (His next project: new driers.)

In the span of the cobalt study, he had:

- proved his idea in the laboratory;
- guided pilot-plant runs;
- scaled the process up to the production plant;
- written the detailed plant procedure;
- eased the process through full-scale trials;
- acted as trouble shooter for first customers.

Able assistants and advice from the plant's engineering

PEAK of project: plant foreman Leo Kunz samples first production run, gives nod. Pings helps draw patent papers (*right*).



LAB SAMPLE of compound gets critical eye from research chief Pings. His OK is Packer's ticket to pilot plant (*right*).

group were, of course, responsible for more than a little of the project's successful outcome.

To his colleagues in sales, Packer turned over a product that has definite appeal (it goes further than previous cobalt hydroxides) for formulators of paint and ink driers —biggest consumers of the compound. The new material also appears to have a future in the preparation of other cobalt chemicals*, as a trace element source for use in fertilizers and animal feeds. Witco, incidentally, uses a fair share of the product in its own operations.

There's no exact way to measure the merit of totally integrated research and development. The Witco plan, avers research director Wilbur Pings, "gives the individual chemist an opportunity to feel a closer relationship with . . . production and . . . sales . . . than he would have if he were more departmentalized."

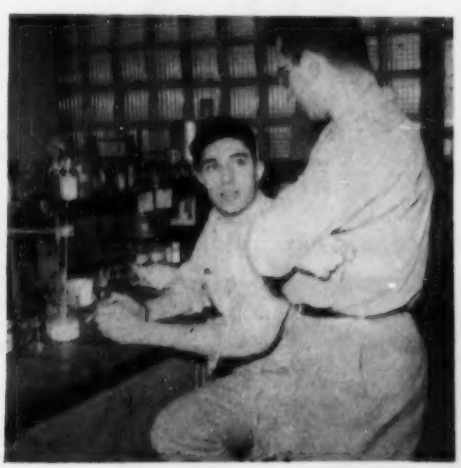
It also makes good business sense to give researchers a realistic outlook on production and sales. Hilton-Davis Chemical Co. (Cincinnati), which has a similar setup, reports that the system smooths the exchange of technical know-how from the lab and pilot unit to the plant; it goes faster with less red tape.

On the debit side there's the difficulty of securing help with the knowledge, inclination and flexibility for this kind of A to Z technical activity.

Another potential pitfall is the danger that a process may reach the plant without adequate attention to engineering details. Witco has tried to avoid this by setting up a process engineering group, responsible to plant management, that works closely with the chemist when a new process enters the pilot-plant stage of development.

For Witco, of course, the pluses of its research setup far outweigh the minuses. But they won't in every case. Non-departmentalized research can pay off for the company that's small enough to use it and at the same time big enough to profit from it.

* e.g., cobalt acetate, which is finding increased use in latex paints.



SERVICE CALLS finish cobalt probe. Packer answers customer's queries, returns to lab (*right*) to launch new study.

Fatty
Acid
Esters

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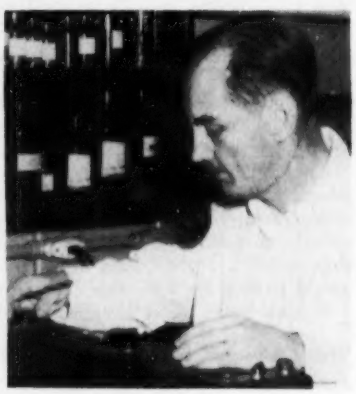
S-K'S STOCK AND CLARKE: In thwarted tumors, cause for satisfaction.

Ganging Up on Cancer

Pharmaceutical research circles are buzzing this week over news of a tumor-inhibiting antibiotic. Newest experimental weapon in the war on cancer, the compound—azaserine (or O-diazoacetyl-l-serine)—has proved effective against malignant growths in mice, will be looked at further to determine if it can do the same in humans.

It's much too early for predictions, but a measure of carefully controlled satisfaction may be in order.

Reason: in addition to exhibiting a promising degree of activity, azaserine is synergistic with another new cancer drug, 6-mercaptopurine. Another bright note is that the antibiotic has already been isolated and synthesized.



WELCOME'S HITCHINGS: Synergism and separate resistance.

Evaluation of azaserine as a tumor-inhibitor was done at the Division of Experimental Chemotherapy, Sloan-Kettering Institute for Cancer Research, New York, by Chester Stock, Christine Reilly, Sonja Buckley, Donald Clarke, and C. P. Rhoads. The combined chemotherapeutic action of azaserine and 6-mercaptopurine was probed by Donald Clarke, Frederick Philips, and Chester Stock of Sloan-Kettering, and by Gertrude Elion and George Hitchings of the Wellcome Research Laboratories, Tuckahoe, N.Y.

No shot in the dark, azaserine was singled out of a great number of synthetic chemicals and miscellaneous materials tried for anti-tumor activity on experimental animals. Actually, its power to retard the growth of cancer cells first became apparent when crude filtrates of *Streptomyces* culture were found to halt cancer in mice.

Analysis of the thwarted tumors pointed to azaserine as the active ingredient in the *Streptomyces* filtrate. Further investigation revealed that only azaserine containing l-serine is active. Twice as active as the racemic mixture, it's also twice as toxic. Mouse tumors, mouse leukemia, and the bacteria *E. coli* all yield to the drug.

In the case of some bacteria, azaserine destroys by blocking the utilization of essential amino acids. What the

CSC makes more METHANOL

With the recent opening of the valves of the newly completed $20 million facilities at Sterlington, Louisiana, Commercial Solvents Corporation becomes one of the world's largest producers of methanol, for sale to meet the growing needs of expanding American Industry.

For steady, dependable large-volume supply of methanol, CSC is your logical source.

High-quality CSC methanol, produced from natural gas, is being supplied at a minimum purity of 99.85% in tanker, barge, tank car, tank truck and drums to all parts of the United States from conveniently located bulk and distribution points. For further information contact the Industrial Chemicals Div., Commercial Solvents Corporation, 260 Madison Ave., New York, N. Y.

INDUSTRIAL CHEMICALS DIVISION

CSC

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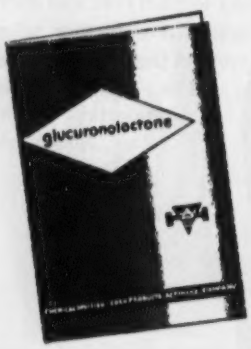
Glucuronic Acid is an important basic structural unit of the mucopolysaccharides present in essentially all fibrous and connective tissues. In blood and urine of both animals and humans, it occurs in conjugation with steroids and other physiologically active substances.

Highly purified, stable forms of Glucuronic Acid are now available commercially — crystalline GLUCURONOLACTONE, SODIUM GLUCURONATE, POTASSIUM GLUCURONATE, and CALCIUM GLUCURONATE. All four compounds are soluble in water and may be used in a variety of reactions for the preparation of interesting new pharmaceutical products.

Requests for samples and technical information will receive prompt attention.



"Fine Chemicals from Corn"

Chemical Division

CORN PRODUCTS REFINING COMPANY

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action is in tumor cells is unknown. How 6-mercaptopurine manages to slow down the growth of cancerous tissue is also still a mystery.

Independently, each of these drugs can induce resistance to drugs in cancer cells—but these cells are not cross-resistant (to both agents). Cells which have become immune to azaserine are still vulnerable to 6-mercaptopurine, while cells which resist 6-mercaptopurine fall ready prey to azaserine.

Moreover, a considerably smaller dose of the combination is required to arrest mouse cancer than is required when each drug is used separately. This means a minimum of concomitant toxicity.

The isolation, characterization, structural studies, and synthesis of azaserine were carried out by chemists of Parke, Davis & Co.

From a concentrated solution of the *Streptomyces* broth, the active antitumor ingredient was isolated using chromatographic adsorption techniques. Final product: yellow-green crystals, melting in the range 142 to 162 C, having the empirical formula $C_5H_7N_3O_4$. Infrared and ultraviolet absorption data helped peg the structure as O-diazoacetyl-l-serine. A five-step synthesis was then worked out by the Parke, Davis team using O-glycyl-l-serine monohydrochloride as the key intermediate.

Some precedent exists for the use of antibiotics against cancer. Actinomycin, actidione, terramycin, and sarcomycin all have shown some cancer-inhibiting activity. But azaserine appears to be more active, less toxic than any of these.

Right now, azaserine is being produced in experimental quantities only. Exhaustive tests are ahead both in and out of the field of cancer therapy. Thanks to the development of a practical synthesis, volume production could follow closely upon the heels of proof of therapeutic value.

•

Pure Amino Acids: For use as primary standards in chromatography, nutrition studies, microbiological assay etc., Schwarz Laboratories, Inc. (Mount Vernon, N.Y.) has more than 20 amino acids in new optically standardized form.

•

Alkylation Advance: U. S. Department of Agriculture researchers at Tulane University have developed procedures for introducing the long-chain alkyl groups of *n*-octadecyl *p*-toluenesulfonate into benzene, phenols, mercaptans, alcohols, and amines.

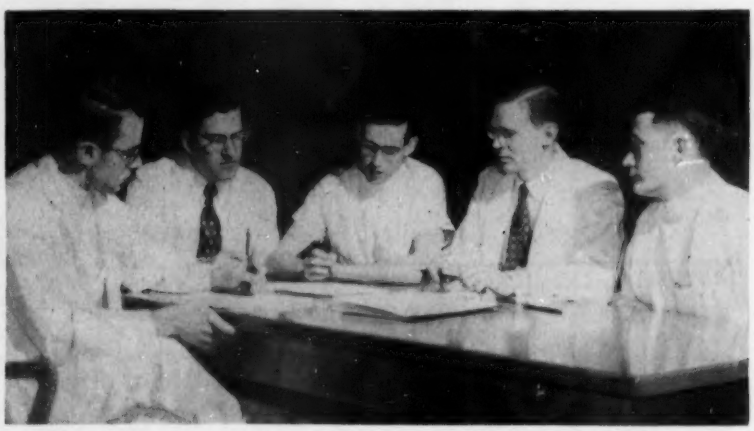
Some of the many compounds alkylated: thiophenol, *p*-nitrothiophenol, *n*-butyl mercaptan, l-butanol, benzyl alcohol, aniline, and diphenylamine. USDA's interest: the alkylating agent is available from commercial domestic vegetable oils, could increase their uses.

•

Ageless Iron: Crystals of pure iron that are resistant to rust have been produced recently in General Electric's research labs. E. G. Suits, G. E. vice-president, and research director, says the pure iron has a tensile strength of 1 million psi, 100 times greater than any known metallic crystal. There is now no practical use for the new iron.

•

Polyisobutylenes: Nova Chemical Corp. is selling German-made polyisobutylenes in molecular weight grades of 15,000, 50,000, 100,000, 150,000, and 200,000. The 150,000



PARKE, DAVIS PROBERS:* In isolation and synthesis, a bright picture.

* l. to r.: R. Westland, E. Wittle, J. Moore, J. Dice, and E. Nicolaides.

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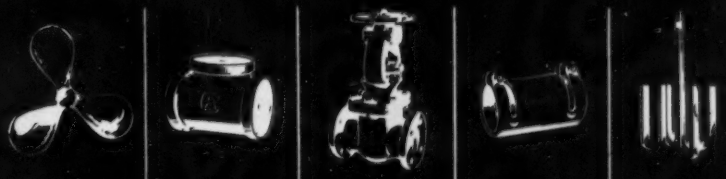
Slip on your robe, cuddle up with a good book and forget about the plant. You've done your best today, and you need relaxation to keep on doing your best. If you've specified Cooper Alloy stainless steel castings, valves or fittings for those corrosive operations, you've put your problem in hands you can trust. Our thirty years of experience is your guarantee of quality products—use them with confidence and . . . relax!



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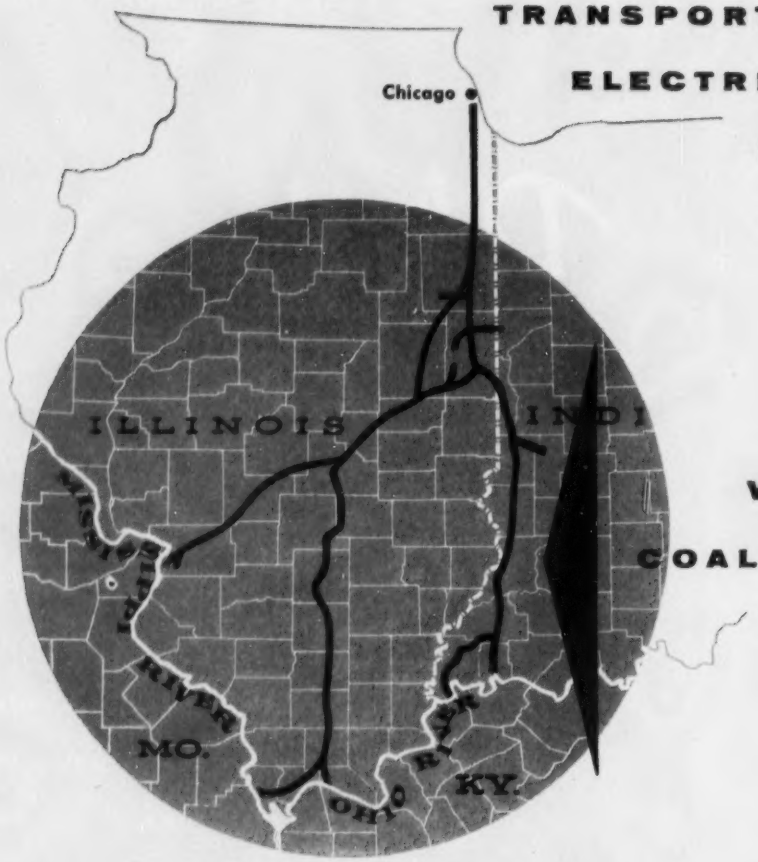

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ask about the tremendous coal supply and the oil from wells and pipelines in this Indiana-Illinois region.

ask about the millions of kw capacity available from private utilities . . . new stations under construction.

ask about the natural resources . . . the abundance of limestones, fluorspar, dolomite, sand, silica; also timber.

ask about the large, experienced labor force and the harmonious labor-management relations that exist.

ask about the proximity to major markets and the railroads, barge lines, river-rail transfers and highways.

For factual information on the outstanding industrial opportunities in this Indiana-Illinois area, write in confidence to Chief Economist:

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What can these MONSANTO ISOCYANATE applications do for you?

foams...

Monsanto isocyanates can be used to produce a wide variety of both rigid and flexible foams. Tolyene diisocyanate, for example, will give foamed-in-place resins which can fill the most intricate spaces without the usual labor necessary to form exact shapes to fit each cavity. RIGID FOAM applications: in aircraft industry, flotation equipment, thermal insulation, sound insulation and many other uses. FLEXIBLE FOAM applications (good performance at low density): transportation seating, mattresses, furniture, etc.

polyester rubber

Diisocyanates are a necessary ingredient for improving the processing of new, long-wearing synthetic rubbers such as Vulcollan. Several types of these diisocyanates are available for commercial use from Monsanto.

textiles...

Octadecyl isocyanate can be applied to give a highly effective and durable water repellent. Leather may also be treated with this same repellent.

herbicides...

Such compounds as phenyl isocyanate show high promise for use in the production of herbicides to prevent the growth of narrow leaf grasses in seed crops and also in new urea-type soil sterilants.

adhesives...

Monsanto isocyanates can be used to produce unusually high quality adhesives with high resistance to heat and hot water, and a wide range of applications. Already polyisocyanates have improved the bonding strength of rubber to synthetic fabric in automobile tires. They also have made possible the manufacture of polyurethanes for adhesives which give a remarkably strong bond in rigid materials.

polyurethanes...

The manufacture of these compounds is based on diisocyanates. In addition to adhesives they are being seriously evaluated for the production of surface coatings, dielectric films and sizings.

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☐ Technical Bulletin No. P-125, "Isocyanates."

☐ Technical Bulletin No. P-145, "Isocyanates in the Adhesion of Rubber."

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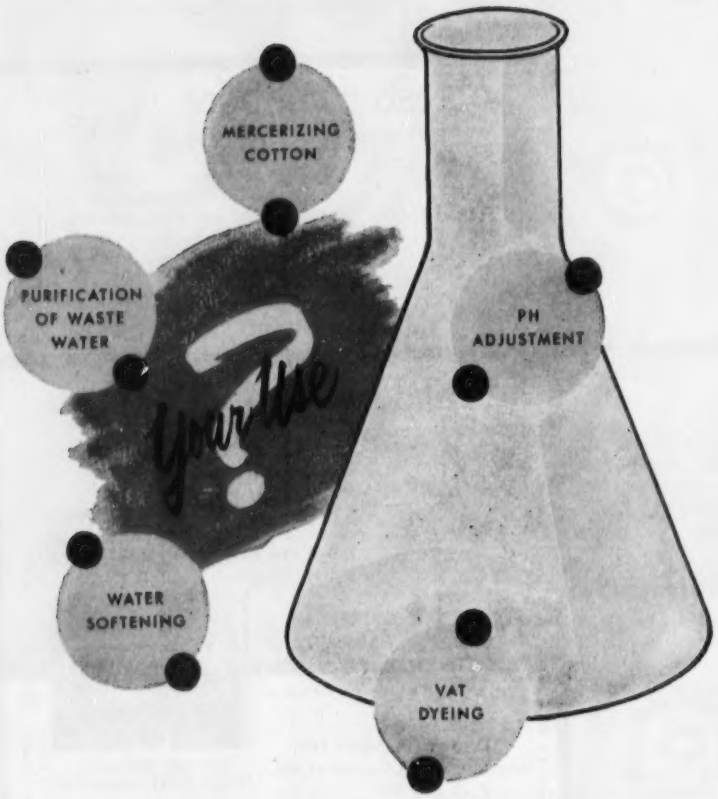

CO_2 is non-toxic and relatively non-corrosive. Used as a weak acid solution, it is completely safe . . . costly, time-consuming precautionary measures are eliminated.

Weak acids made with pure, moisture and residue-free Red Diamond CO_2 are already benefiting many industries. If *your* operation entails the use of weak acids, and a continuous process is desired . . . it will pay you to investigate the unique advantages of Red Diamond CO_2.

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and 200,000 grades have never before been available in the U.S. Nova claims ready availability and superior clarity for its product. Uses: adhesive and rubber compounding.

•

Purer Lauric: Development of coconut oil fatty acids and their methyl esters is being stepped up by El Dorado Oil Works (Oakland, Calif.). One result: a new grade of lauric acid, Eldo Lauric 96 has replaced the company's standard 90% lauric. For lower purity requirements, Lauric 86 will be produced.

•

Teacher Training: A program to improve high school chemistry education through advanced training for teachers will be supported at Indiana University this year by Standard Oil Foundation, Inc. (Chicago). Trial plan: with a $1,000 grant, the university will supply fellowships to five high school teachers taking summer studies toward Masters' degrees in teaching with a major in chemistry. The university will choose fellowship recipients from among Indiana teachers, waive tuition and fees, apply the foundation's contribution to expenses of the winners. Goal: to help solve the shortage of qualified chemists by providing high school science teachers with the training to stimulate interest in chemistry, impart fundamental chemical knowledge to their students.

•

Safety Record: Monsanto's Texas City research department is the proud possessor of a Liberty Mutual Insurance Co. award for 1,139,525 safe man hours (2,067 days) of operation. The unit, Monsanto reports, has never had a lost-time accident.

•

Arrivals: Polymers are the chief attraction in the week's new product spotlight:

- Soft, rubbery materials may be produced from polymerizations of methoxyethyl acrylate and butoxyethyl acrylate, Rohm & Haas Co.'s (Philadelphia) newest monomers. Copolymerization of butadiene with 10% of these alkoxyethyl acrylates yields polymers that cure to hard, glossy, chemically resistant films. Both monomers are available in pilot-plant quantities, could be boosted to commercial output in present production equipment.
- Goodyear Tire & Rubber Co.'s (Akron, O.) polyester synthetic rubber, Chemigum SL, is the substance of Airfoam SL—the company's new elastomer foam. Goodyear says the foam resists fire, oil, grease and sunlight, may be produced in all colors and a variety of textures. Potential market: in foam rubber applications

It pays to pamper crops!

The farmer appreciates the value of scientific pest control, for he can thus raise more crops per acre and yield a greater profit. And progressive formulators, too, realize this growing market demands better chemicals to produce effective herbicides. For these, as well as for insecticides, Neville makes two grades of Solvents that are proving highly popular in this field.

NEVILLE AROMATIC SOLVENTS

	NEVSOLV 200	NEVSOLV 30
Boiling Range	195°C (383°F) to 280°C (536°F)	130°C (266°F) to 190°C (374°F)
Specific Gravity	.890 to .915	.835 to .845
Color	Straw	Water White

- *These NEVSOLVS are active solvents for DDT, BHC, 2-4-D esters, etc. Especially clean, good odor.*

  Each grade has individual characteristics but other boiling ranges are available.

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AC-2

how Maas HYPO improves these industrial processes

And perhaps one of the many Maas chemicals can help improve your product or process. Write today for folder describing the Maas line.

Maas Hypo gives better quality at less cost to leather tanners.

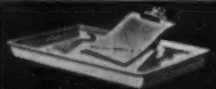
Maas Hypo aids with coloring of brass and copper.

Maas Hypo is used to assist in bending and forming wood.

Maas Hypo is found to be a most economical means of separating starch from gluten in flour.

Maas Hypo gives better results in steel treating baths.

Maas Hypo aids soapers with the manufacture of cleaning compounds and soap.



And Maas is the leader in photographic chemicals—hypo—carbonate—sulfite—and other photo pure chemicals.

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RESEARCH . . . . . .

that put a premium on nonflammability and high resistance to deterioration.

•

Potency Booster: Horticulturists Goodman and Hemphill of the University of Missouri (Columbia) have turned up evidence that indole-3-acetic acid enhances the effectiveness of antibiotics in countering plant diseases. Further research, now under way, is aimed at determining if related compounds are also active in this respect. "This synergistic effect of plant growth regulators," ventures the pair, ". . . may have an important practical application in the . . . use of antibiotics in plant disease control."

•

Tracer: A new density gradient analysis setup, manufactured by Microchemical Specialties Co. (Berkeley, Calif.), makes possible rapid determinations of whether two materials originate from the same place. Based on comparative analysis, using less than 25 mg. of sample, the method is applicable to glass, soils, sand, rock, hair, and mineral substances. Apparatus required for the test is of the laboratory variety, includes gradient bottles and liquids, glass tubes, densitometer, combination delivery and suction head.

•

Enzyme Offering: Pabst Laboratories (Milwaukee, Wis.) is now producing uridine - 5' - monophosphate — a rare physiological coenzyme. Known as UMP, the material has never before been commercially available. The Pabst product, purified to better than a 90% grade by ion-exchange, should spark a new wave of biochemical probes into the coenzyme's metabolic role.

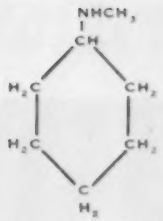
•

Carrying On: Despite severe fire damage to laboratory facilities at Bainbridge, N.Y., Borden Co.'s (chemical division) studies of foundry core bindings and shell-mold resins are continuing without interruption. Equipment for the work is housed in a temporary research unit while Borden rebuilds the gutted laboratories.

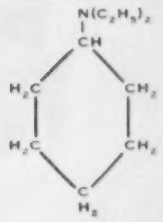
•

Sprucing Up: The Du Pont Co. is now readying its new industrial medicine research building at Newark (Del.) for its formal dedication, March 29. New home of the company's Haskell Laboratory (which previously was quartered at Wilmington, Del), the facilities accommodate a 50-member staff, cost Du Pont $2 million. They will be used for studies aimed at eliminating health hazards from products and manufacturing processes.

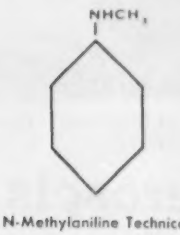
Versatile intermediates, solvents and acid acceptors



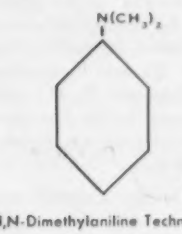
N-Methylcyclohexylamine Technical



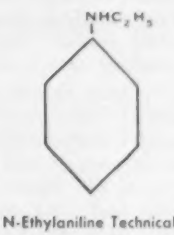
N,N-Diethylcyclohexylamine Technical



N-Methylaniline Technical



N,N-Dimethylaniline Technical



N-Ethylaniline Technical

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N-METHYLCYCLOHEXYLAMINE TECHNICAL is a water-white liquid with a specific gravity of 0.86 at 20°C. It is soluble in both alcohol and ether but only slightly soluble in water. It may show traces of cyclohexylamine and N,N-dimethylcyclohexylamine.

SPECIFICATIONS: Purity: 99% minimum
Methylaniline content: 0.3% maximum
Distillation range: Distills 5 to 95 cc. within 2.0°C., including 149°C, corrected to 760 mm.

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PAYTRON TRANSMISSION COMPANY

SLIP GUARD: For less power loss, a squirt of aerosol belt dressing.

Aerosols Punch the Clock

It's a water-displacing chemical and rust inhibitor called Spradri. It's designed for drying out electrical equipment, which needn't be dismantled for the job. It's sold by Perfecting Service Co. (Charlotte, N. C.) and it's one of the newest in the fast-growing family of aerosol products developed for industrial uses.

As a group scarcely more than a couple of years old and still of mighty small volume compared with their home-aimed brothers, industrial aerosols began simply as handy packs of established products, but are gradually branching into new arenas.

They've been helped along by the suppliers of the aerosol propellants, Du Pont (Freons) and General Chemical (Genetrons), as well as by leader Crown Can Co. (division of Crown Cork and Seal Co.), makers of the commonly used Spra-Tainers.

In many cases, the initial aim of pressure packaging was to provide a novel and attractive unit to take advantage of the plainly demonstrated appeal of aerosols. Happily, it has often turned out that the product is not only more salable, but is also more widely used, does a better, cleaner job, and is more economical to employ.

New Dress for Dressing: This is illustrated by one of the first industrial aerosols—belt dressing. It is an old product, sold almost as long as leather power transmission belts have existed. Designed to reduce belt slippage, these were generally put on with a brush or rag.

About five years ago a few companies—e.g., A. W. Chesterton (Everett, Mass.), with its Belt-Flo Spragrip—tried out aerosol packaging. Particular emphasis was given to making a product that would remain sprayable over a period of years. Then, about two years ago, the first of the push-button dressings appeared on the market.

Seemingly higher priced than old-style products (typical: 12-oz. can for $1.50), the new material, slightly reformulated to give a thin, sprayable liquid, has worked out to be more economical for many buyers. Workers don't use excess, don't inconsiderately heave out half-used containers.

Though the total market for this material isn't a giant—one "guesstimate" puts it at 100,000 units—it has tempted in a number of makers: Alexander Bros. Belting Co., Philadelphia (Liquid Belt Lube Dressing); Graton & Knight Co. (Graco Sprazon) and Warren Belting Co. Inc. (Warrenteed Jet Spray), both Worcester, Mass.; Abel Transmission, Inc., Plainville, Conn. (Belt Spray).

Developing Market: Other products long available in another form are the penetrants and developers for dye penetrant inspection systems (*CW, April 18, '53*). Competition has forced most of the larger makers of these products to switch to aerosol packs. It's been a fairly simple switch—an inhibitor to cut can corrosion has been the major change.

And with the change have accrued some marked advantages: a more uniform coating results, there is no solvent loss when standing—product remains uniform; faster drying liquid is possible; and on a small job, aerosol units are cheaper to use. Magnaflux Corp. (Chicago), Phillips Products, Inc. (Cleveland) and Turco Products, Inc. (Los Angeles) are among those selling such products.

DU PONT

SLIP AID: For less friction loss, a shot of colloidal graphite.

about Benzoflex Plasticizers

STRONGER! Curing temperature with Benzoflex plasticizers can be lower, or greater strength can be obtained at usual curing temperatures.

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DU PONT

LINE PROTECTION: A plastic coat for engineer's lines.

Like belt dressings and the developers, rust penetrating oils have lately appeared in push-button cans. Examples: Kano Labs' (Nashville, Tenn.) Kano Kroil, and James R. Kearney Corp.'s (St. Louis) Kearney Rust-Cutter.

Novel Pairing: New industrial products, too, are finding their way onto the market. One pairs the novelty of silicones with the newness of pressure packing—Dow Corning's Antifoam A spray, which has been sold nationally about six months.

Silicones help out in another aerosol product for factory application: plastic injection molders find their products slip out of their dies more easily when a release agent like Borco Chemical Co.'s (Chicago) Real Ease; Injection Molders Supply Co.'s (Cleveland) IMS Silicone Spray; or Price-Driscoll's (New York) Bomb Lube is used.

DU PONT

LINEMAN HELP: For simpler repair work, bomb-borne rustcutters.

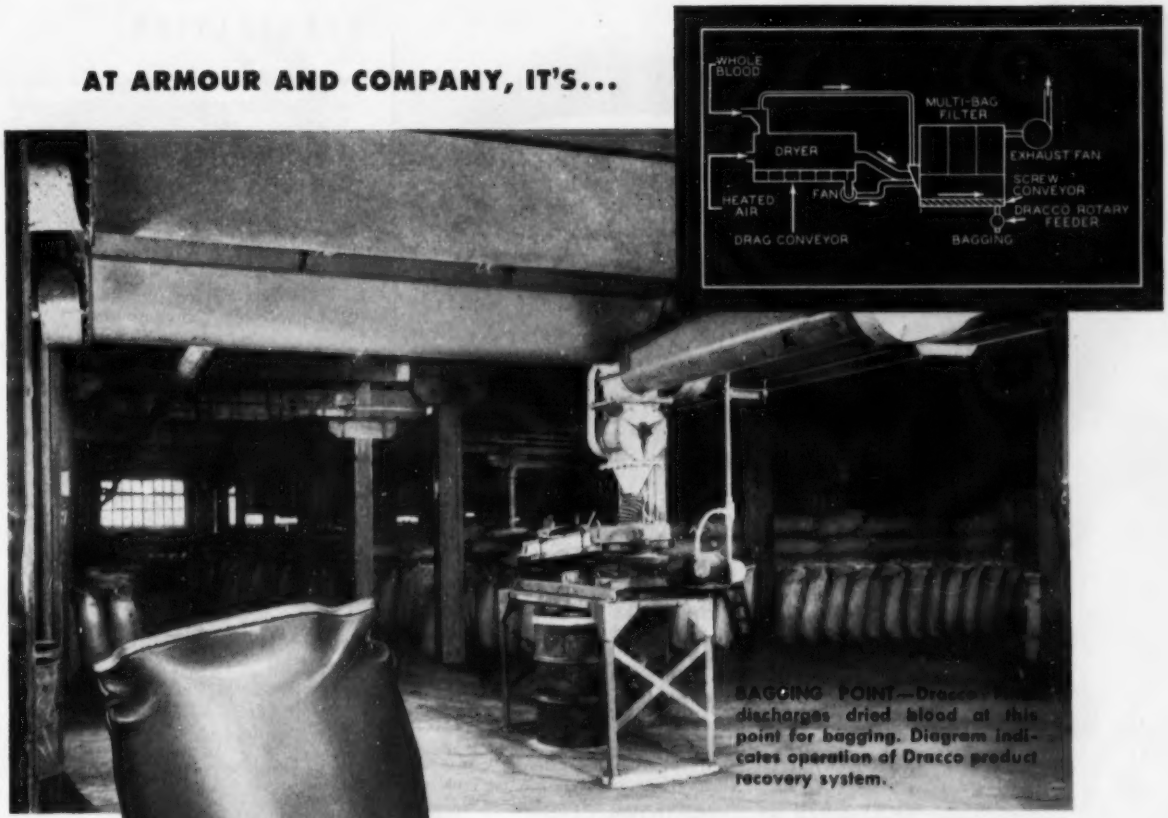
Specialty Products Co. (Jersey City) has recently put a new aerosol product on the market, S-52 Yarn Dressing. It's a water-soluble wax used to salvage sections of warp damaged in weaving. A shot of S-52 plasters down the broken fibers, permits them to continue through the weaving step.

Three for Fur: Professional furriers can get help now from some new aerosols: Kandu Chemicals, Inc. (New York) offers its Kandu Soft-Glo Fur Lusterizer and Kandu Regrey, and Security Fur Seal Co. Inc. (New York) has its Security A-1 Lusterizing Formula.

Draftsmen and artists have taken to aerosol-packed inks like Crown Industrial Products Co.'s (Woodstock, Ill.) Design Layout Ink; Reynolds Industries, Inc.'s (Cleveland) Quick-Spraying Stencil Ink; and Protective Coatings Corp.'s (Park Ridge, Ill.) Kempro Design Layout Ink. Clear acrylic sprays have already found a market in art and design work.

Oil sprays and colloidal graphite lubricants have joined the ranks of plant-used aerosols. But a petrolatum spray, Haynes Spray (Haynes Mfg. Co., Cleveland), is a lubricant that illustrates how useful aerosols can be. Pure enough to meet U.S. Pharmacopoeia and U.S. Public Health Serv-

AT ARMOUR AND COMPANY, IT'S...



BAGGING POINT—Dracco [illegible] discharges dried blood at this point for bagging. Diagram indicates operation of Dracco product recovery system.

...BLOOD BY THE BAGFUL!

Once again Dracco Dust Control Equipment is the heart of one of industry's most unusual production processes.

Dried blood—a valuable ingredient for adhesives—is an important by-product at Armour and Company. So much so, that round-the-clock drying operations are maintained to convert whole blood to blood solids.

Thousands of gallons of blood collected at Armour's meat packing plants are processed and bagged. This blood is fed into a dryer which is uniquely integrated with a Dracco Dust Control System for complete product recovery.

Dried blood solids, removed from the dryer's bottom by drag conveyor, are dropped into a Dracco Fan and blown into the Dracco Filter for collection. To avoid loss of any product, the Dracco System also filters heated air from the dryer and captures all air-entrained blood particles. The result: Armour's blood solids are bagged in a dust-free, efficient operation.

Do you have a new or existing production process which can be made more profitable by peak-efficiency Dracco Dust Control or Recovery? Consult an experience-qualified Dracco Engineer and find out!

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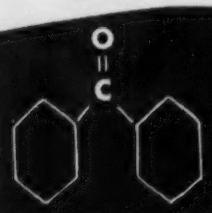
benzophenone



BENZOPHENONE (diphenyl ketone) is an intriguing intermediate with an active carbonyl group connecting two phenyl groups. Its use in perfumes is well known, but its potential in synthesis may still be exploited. It has been suggested as an intermediate for certain antihistaminics, hypnotics and other pharmaceuticals; insecticides; dielectric media; and as a gas absorbing medium.

KAY-FRIES SPECIFICATIONS...

melting point	● 46.5° – 48.5° C.
molten color	● below 100 Hazen Scale
odor	● characteristic (rose-geranium type)

Typical reactions of BENZOPHENONE

$RCH_2MgX + C_6H_5COC_6H_5 \xrightarrow{H_2O} (C_6H_5)_2C(OH)CH_2R + MgX(OH)$

Grignard compound → Substituted Benzhydrol

$XCRHCOOC_2H_5 + H_2 + C_6H_5COC_6H \xrightarrow{\text{catalyst}} (C_6H_5)_2C(OH)CRHCOOC_2H_5 + HX$

Subst. haloacid ester → ethyl 3-hydroxy-3, 3-diphenyl-2-subst. propionate

$H_2 + C_6H_5COC_6H_5 \xrightarrow{\text{catalyst}} (C_6H_5)_2CHOH$

benzhydrol

In the reduction, other products may be obtained by varying the conditions.

$H_2O_2 + C_6H_5COC_6H_5 \longrightarrow C_6H_5COOC_6H_5 + H_2O$

hydrogen peroxide → phenyl benzoate

$CO_2 + H_2 + C_6H_5COC_6H_5 \xrightarrow{Na} (C_6H_5)_2C(OH)COOH$

benzilic acid

TECHNICAL BULLETIN AVAILABLE

American-British Chemical Supplies, Inc.

Selling Agents For

KAY-FRIES CHEMICALS, INC.

180 Madison Avenue, New York 16, N. Y. ● MUrray Hill 6-0661

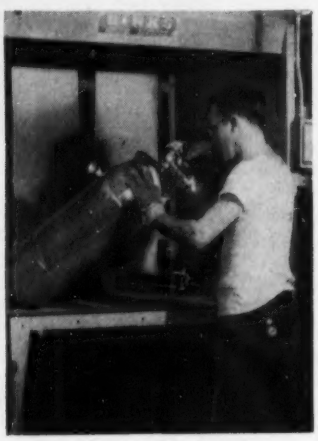
ice standards, it is designed for oiling food machinery and dairy equipment —lubrication that was formerly done with greases that were wiped on with the finger.

Two Jobs: In many cases, products conceived for household use have taken up a second job in the plant. Aerosol insecticides, touch up paints,* rust inhibitors have probably more use industrially than elsewhere. Auto mechanics and repairmen have started carrying various aerosols.

Medicine has welcomed pressure packaging—there are inhalants, burn sprays, plastic bandages. Veterinarians, too, are getting products in aerosol cans.

Diverse as the uses of these aerosols are, in '53 a number of them were still in the 2,000 units/year class. And for a big loader to fill more than $200,000 worth of all kinds of industrial items is rare (no sellers have their own loading lines yet). Tenfold increases in volume are predicted for '54, however, and plenty of new products are sure to appear; it's plain industrial aerosols are just getting started.

* Lumbermen even use them for marking trees to be felled.



Hot Spot for Silicones

A JET ENGINE combustion "can" gets a coat of Sicon, a siliconebase heat-resistant finish. First employed to touch up aluminized metal surfaces, the coating is now used by Solar Aircraft to give extra protection to Solar-built jet engine parts that are subjected to temperatures up to 800 F. According to Solar, it's the first paint that could be used on jet engines. Sicon is a product of Midland Industrial Finishes Co. (Waukegan, Ill.).

EVERFLEX G . . . a new "latex" for paint manufacturers

EVERFLEX G is a new internally-plasticized polyvinyl acetate copolymer. It offers *all* the inherent advantages of styrene-butadiene latices — but is *not* susceptible to oxygen attack and the resultant discoloration and brittleness.

EVERFLEX G also overcomes completely the disadvantages of earlier polyvinyl acetate copolymers in that it does *not* require the addition of a separate plasticizer, and has excellent water and scrub resistance.

The benefits are manifold. Emulsion paints based on EVERFLEX G are *permanently* flexible. They have superior adhesive properties. They are highly resistant to water and oils. EVERFLEX G not only overcomes most of the disadvantages of present day water base paint for interior uses, it extends the application of such paints to exterior use on masonry. Even the exterior painting of WOODEN structures is a distinct possibility! Several wooden test buildings and homes have been painted with an exterior emulsion paint based on EVERFLEX G, and early indications show great promise.

EVERFLEX G is now being produced in commercial quantities. Inquiries from paint manufacturers are invited. Write or phone us today, or contact R. T. Vanderbilt Co., who markets this product to the paint industry as "Norvan G".

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West Coast: Martin, Hoyt & Milne, Incorporated, Los Angeles, San Francisco, Seattle, Portland

IT WORKS! No stopping for seasons with plastic snow.

Sneering at the Sun

Year-round skiing, even below the blizzard belt, is possible with new plastic-chip snow. Besides being a boon to skiers, the synthetic snow permits plastic makers to contribute to sport an otherwise wasted material.

Ski runs of synthetic snow may be just around the corner. That's the prediction by Jacques Brunel, of Beacon, N.Y., who has a patent pending on the novel idea.

What's singular about the "snow" is that its inventor is not a chemist, is connected with no chemical company. He developed the substitute because he lives in an area that does not get enough real snow to satisfy his yen to ski.

Just what the synthetic snow is, Brunel won't tell. But he does say that it's a "right mixture" of different thermosetting resin shavings purchased from makers of buttons, poker chips, billiard balls, electric sockets.

Brief Biography: Brunel was born in Winnipeg, Manitoba, but, when he was 12 years old, his father took him to New York City to live. Instead of deep Canadian snows, he had to make the most he could of Central Park.

An American citizen by the time World War II came along, he tried to get into the Army's ski troops. "But I didn't have any luck," Brunel explains. "Though I came from snowy Canada and was a skier in the bargain, I ended up—a foot soldier."

Slight Trek North: After the war he decided to go into business for himself. Longing for more air, space and snow, he moved 60 miles north of New York City to Beacon, N.Y. There he opened his own auto painting and body shop.

At Beacon the snow falls were light, but he contained himself until last winter when he hit on the idea of making a ski run with plastic shavings.

He began visiting various factories in search of waste matter that had the consistency of snow. The shavings that suited him best were of thermosetting resins. (Equally usable are chips and flakes. One advantage of chips is that they are less likely to be scattered by the wind.)

His pilot venture was a recreation park not far from Beacon. Last spring he made a ski run 500 ft. long and 16 ft. wide (*see cuts*). The run is not only synthetic snow. Beneath a 3-in. layer of shavings is an 8-in. base of cottonlike waste, which Brunel obtained from a fibre processing plant.

He calls his run Snow Valley, hails it as the "World's Only Synthetic Snow Slope." His invention he regards as a natural—"I can't understand why no one else thought of it."

Not Cheap: So far Snow Valley has had only moderate success. Elsewhere Brunel has run into his share of skeptics. At a meeting of New England resort operators last fall, the summer snowman told about his discovery. At first the operators showed interest, then chilled on learning the cost. A 2,000 x 20-ft. trail, covered at 30¢/sq. ft., would come to around $12,000.

Some resort operators felt the figure might be acceptable if the synthetic snow were a permanent thing. But no one knows how well the fibre base will resist rot and earth penetration. And while the durability of the plastic cover is not challenged, there are maintenance costs to be considered. (Snow Valley needs a "snow" fall of about 900 lbs./month to keep it skiable.)

Another factor is the skier himself. Resorts see skiing as only a seasonal sport. But as one veteran skier notes, it might be to the operators' advantage to have a synthetic slope handy if snow falls are below normal.*

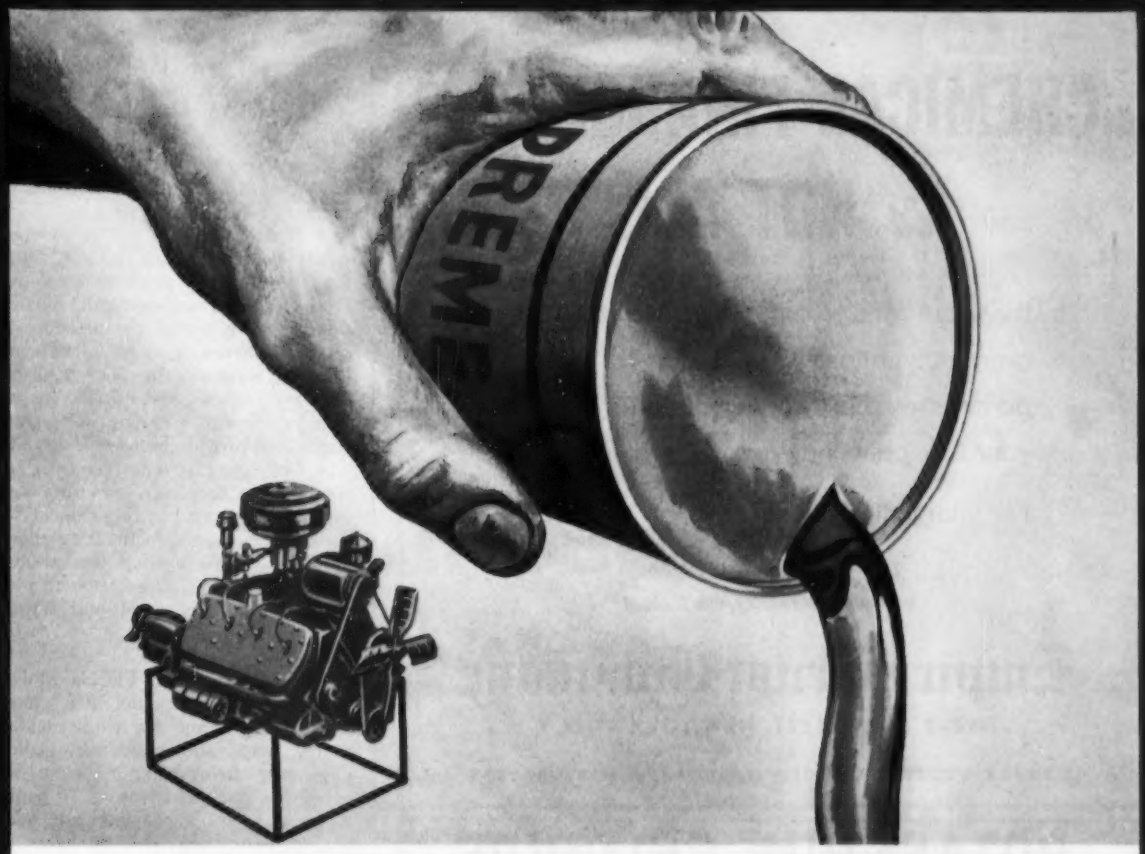
Still Optimistic: Brunel remains optimistic despite the opposition he has run into. He says if he can get the support of skiers, resort owners will be obliged to adopt his development. "After all," he points out, "a golf course is a good-size investment—but when enough people wanted to play golf they got built."

Something Brunel has not succeeded in doing is to get some chemical producer on his side. He's convinced that's how the cost can be brought down, perhaps cut in half. Also, he'd like a "snow" that's all white—the present kind is a variety of colors. This rainbow effect, of course, has no effect on the ski-ability of the trail, and as long as Brunel is making use of waste material, he can't be choosey about tints.

Whether Brunel can make all-weather skiing a reality remains to be seen. A good deal depends on whether the nation's 6 million ski enthusiasts start clamoring for all-year snow.

* To date, only one resort, Oak N' Spruce, (South Lee, Mass.) is actually installing a Brunel slope.

SKIING IN SHORTS: Year-round sport for 6 million enthusiasts.



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Modern engines demand more from lubricants than just lubricating efficiency. Detergency, corrosion inhibition, and other properties have become of great importance. Among today's widely used oil additives are the calcium and barium salts of alkylphenol sulfides, such as those prepared from octylphenol and nonylphenol. These oil additives aid in the suspension of solid matter, help to retard adhesion of sludge to engine surfaces. Because the salts are derived from weak acids and strong bases, they also inhibit corrosion by neutralizing engine acids.

Rohm & Haas octylphenol and nonylphenol are also useful in the manufacture of synthetic resins, fungicides, germicides, dyestuffs, and pharmaceuticals. They serve as intermediates for rubber chemicals, wetting agents, and emulsifiers. Octylphenol stabilizes ethyl cellulose against deterioration by heat and light. For further information about the alkylphenols, or other products listed below, simply check the coupon.

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SPECIALTIES. . . . .

Wrought Iron Spray: Illinois Bronze Powder Co., Inc. (Chicago) is now selling Wrought Iron Spray-O-Namel, a 12-oz. aerosol of black enamel.

•

Mortar Pair: A couple of new cements for bonding brick and tile are on the market:

• Pennsylvania Salt Mfg. Co. is selling Pennsalt Furan Cement, a furfural-ketone resin product developed for alkali- and acid-resistant installations. Two types of the cement are offered—Powder S, with a siliceous filler for resistance to most acids except hydrofluoric, and oil and grease; Powder C, with a carbon filler that's claimed to provide broader resistance.

• Ceilcote Co. (Cleveland) is introducing Corobond, an improved synthetic resinous bonding cement for use in process equipment. It's claimed to have relatively easy workability, and long pot life, in addition to providing high mechanical and tensile strength.

•

Industrial Reodorant: Florida Molasses Corp. (Auburndale, Fla.) now offers a "reodorant" for use in making paint, soap, and chemicals. Called Citrascent Reorodant, it is an inexpensive grade of citrus oil. In paint, it is said to cancel out the odor characteristic of paint thinners; in aqueous and hard soap, it gives a pleasing odor.

•

Sticky: Dacar Chemical Products Co. (Pittsburgh) has a new "dryback" adhesive for use on sponge rubber, weather stripping, etc. The glue is applied to the object desired, dries without sticking. Wiping with the proper solvent makes it tacky and ready for use immediately.

•

Strictly Ethical: In the CW Report on the pharmaceutical industry (*Jan. 9*), the authors included Mead Johnson & Co. in a listing of "leading companies in the proprietary drug field."

Mead Johnson's president, L. D. Johnson, Sr., points out that his company "is not in any sense a company in the proprietary drug field . . . is a firm of the highest ethical order."

With this statement the authors agree. For although Mead Johnson does distribute one or two products in the supermarket field—which is not entirely normal ethical industry practice—it does not warrant a categorization of the company as a proprietary manufacturer.

•

No Burn: Paisley Products, Inc. (New York) has come up with a new laminating adhesive, Insulam, for adhering

CHEMICAL PROGRESS WEEK-MAY 17-22

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how to beef up raw materials

Hungry market? Look for yourself! Here in the Chemical Process Industries they gobble up more equipment, demand more new plant capacity, consume more raw materials than any place else in industry. And any analyst worth his crystal ball can tell you . . . with a $70 billion-a-year output predicted for 1960, the CPI's appetite will grow even bigger.

How hungry? Let's stick to raw materials . . . chemicals—fuels—minerals—drugs—specialties . . . *what's your product?* Annual purchases tote up to $33 billion right now . . . and there's more new business ahead. Intense intra-industry competition is making the whole field hustle . . . many firms here earn half their incomes from products less than 10 years on the market . . . and the chemical engineer knocks himself out looking for production shortcuts, new methods and better materials.

The chemical engineer? Sure! His inspiration and ingenuity have fired the whole catalytic comeuppance of this fabulous field. Why shouldn't he be a big wheel in the purchase of raw materials for production? After all, he's the guy responsible for converting them to finished products. Isn't it logical he'd want to specify the best material for the job?

But how do you sell him? No real problem here! Not when your prospects are itching for new uses and better materials like these heads-up plant operators who read CHEMICAL ENGINEERING . . . not when they're 38,000 strong and comprise more buying-powered, engineering-minded men than any other magazine here in this lusty market.

To make it easy, why not let CE's editors give you a hand? They're doing a lot of the spade work for you right now . . . by telling your prospects *why* and *how* to use raw materials. All you have to do is tell them *which* ones. Add it all up! What's more natural than a tie-in of your products *where* the customer is looking for a solution to his problem . . . in his own business paper . . . CHEMICAL ENGINEERING.

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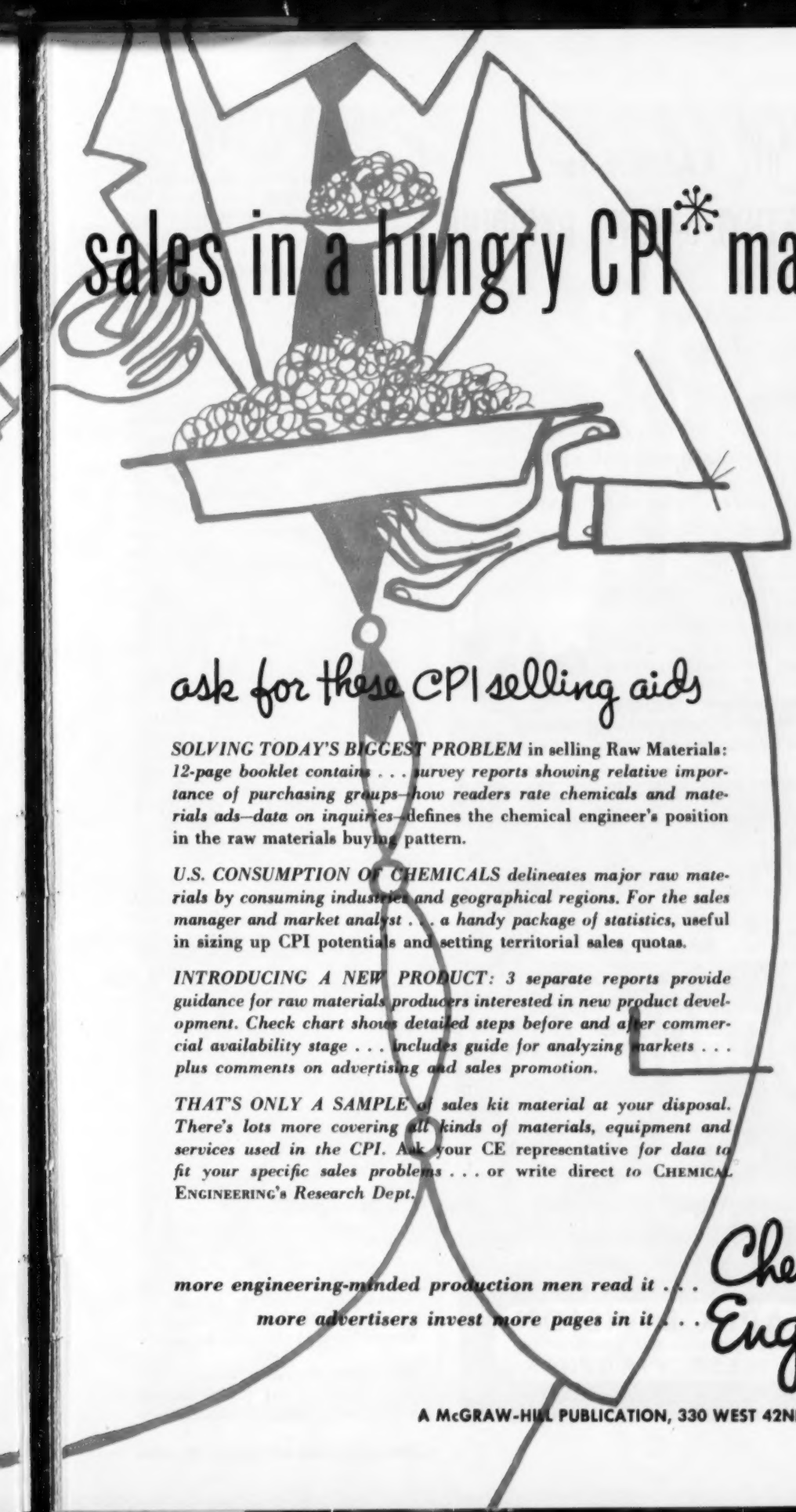

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glass fibre insulation pads to sheet metal, aluminum foil, and similar assembly operations. Said to have high tacks, and resistance to 375 F heat, the adhesive is flameproof.

•

Stain Remover: Dial Chemical Co. (Chicago) is selling a new lipstick stain remover called "C'Est Vite Lipstick Stain Remover."

•

Oil Saver: Newest application of colloidal silver is in machine tool cutting oils. U. S. Movidyn Corp. (Chicago) is now offering Oilidyn as an additive for cutting oils; it's said to eliminate odors in the oil.

•

Enlarging: Mesa Plastics Co. (Los Angeles), has opened a new plastics plant. The installation includes offices and production facilities, plus equipment for manufacturing its line of diallyl phthalate molding compounds.

• Now supplying industrial chemicals in Tulsa, Okla., is Mud Products, Inc. The firm handles Solvay chemicals.

• Boosting its wood-treating facilities is American Creosote Works, Winnfield, La. The firm has converted a 100-ft. cylinder to pentachlorophenol use, will concentrate on processing timber for utility companies.

• Textileather Corp., Toledo, O., is starting a $200,000 expansion program. New warehouses comprise most of the enlargement.

• Construction of the new $500,000 Helena Rubenstein, Inc. plant in El Segundo, Calif., was begun last month. This is the cosmetic firm's first West Coast plant. On a two-acre site, the warehouse, manufacturing section and offices will total 50,000 sq. ft. when completed in July.

• C. P. Hall Co., Chicago, is now handling the silicone emulsions and oils for Linde Air Products in the Chicago area.

•

New Firms: Carolina Veterinary Supply Co., Charlotte, N. C., has been organized to wholesale and retail chemicals, serums, etc.

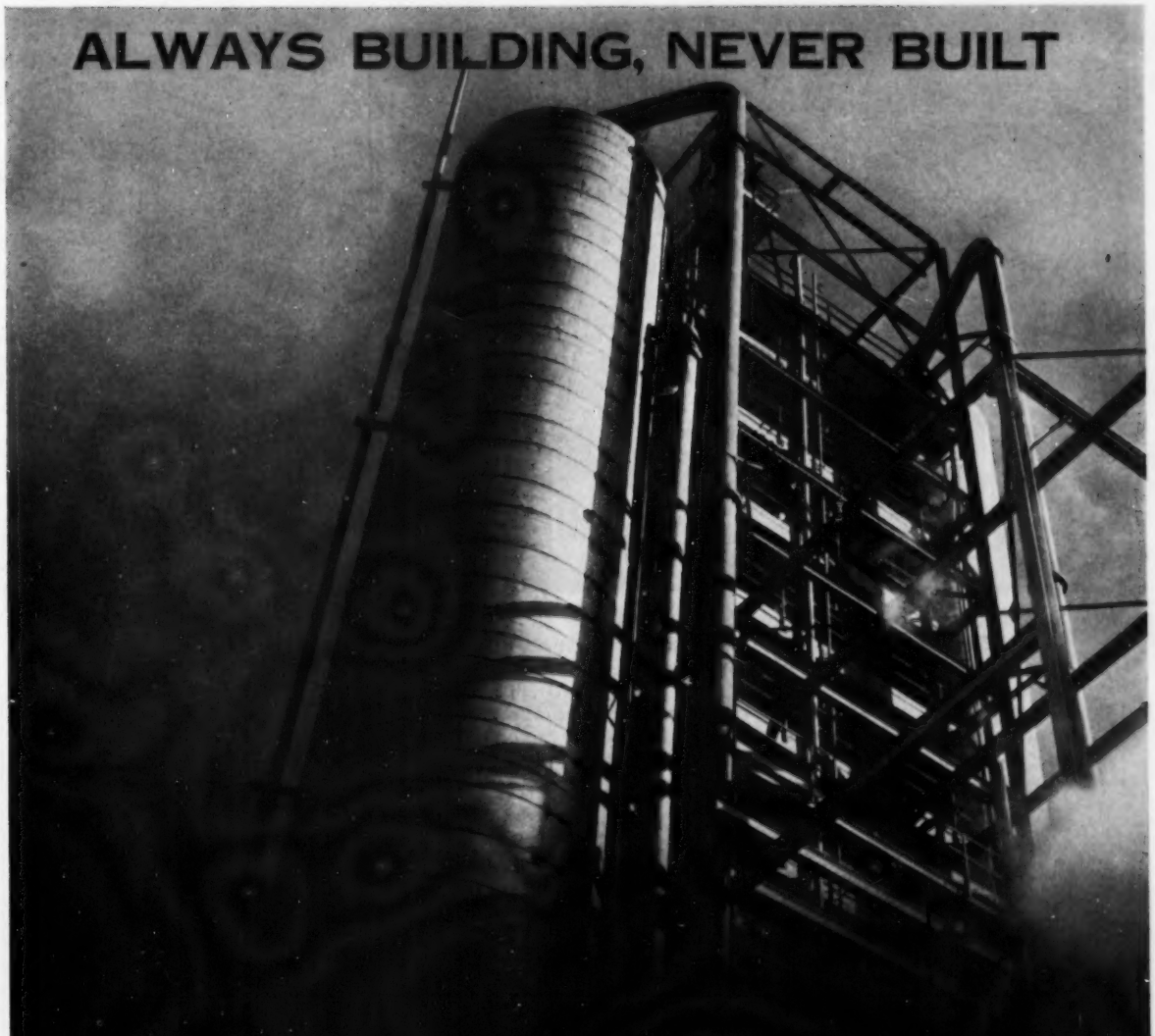
• Southern Weed Co. has been formed in Salisbury, N. C., to make medical and pharmaceutical products.

• New hot asphalt distribution facilities and a water terminal are under construction in Birmingport, Ala., for American Chemicals & Asphalt Co. (St. Louis). Facilities are valued at several hundred thousand dollars.

•

Destaticizer Series: Alframine Corp. (Los Angeles) has just introduced Electrosols, a series of compounds to

ALWAYS BUILDING, NEVER BUILT



The Chemical Process Industries are constantly growing to meet expanding consumer demand. The 1953 sales of chemicals and allied products in the United States reached a record $20,000,000,000 — a 15-fold increase over sales at the turn of the century.

During this half century, Lummus has played a major role in assisting the Chemical Process Industries in their phenomenal growth. Lummus engineers have translated many processes from the pilot plant to industrially successful operations. They have assisted in the development of processes for the manufacture of alcohols, styrene, toluene, butadiene, ethylene, propylene, acetylene, and other chemicals. They have created innovations in reactors, absorbers and distillation equipment. They have designed and constructed chemical plants on every continent.

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VEEGUM
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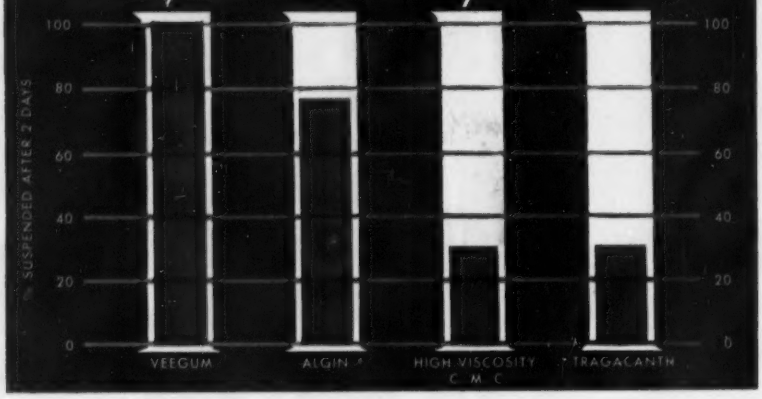

To test the suspending ability of VEEGUM, 4 g of Nytal 300 (an R. T. Vanderbilt Co. talc) were suspended in 100 cc each of aqueous dispersions of VEEGUM and organic gums at 65 centipoises. After all suspensions had 2 days to settle, VEEGUM held from 28% to 300% more talc suspended than any organic gum tested. Results were similar when we tried pyrophyllite, clay, colloidal sulphur, and such organic compounds as DDT.

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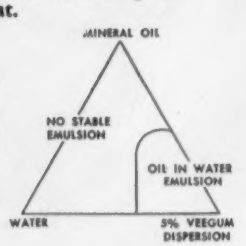

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SPECIALTIES. . . . .

destaticize textile fabrics, foam rubber, paints, phonograph records, plastic resins.

•

New Detergent: Tennessee Soap Co. (Memphis) will soon start marketing a new detergent. Name: Gran.

•

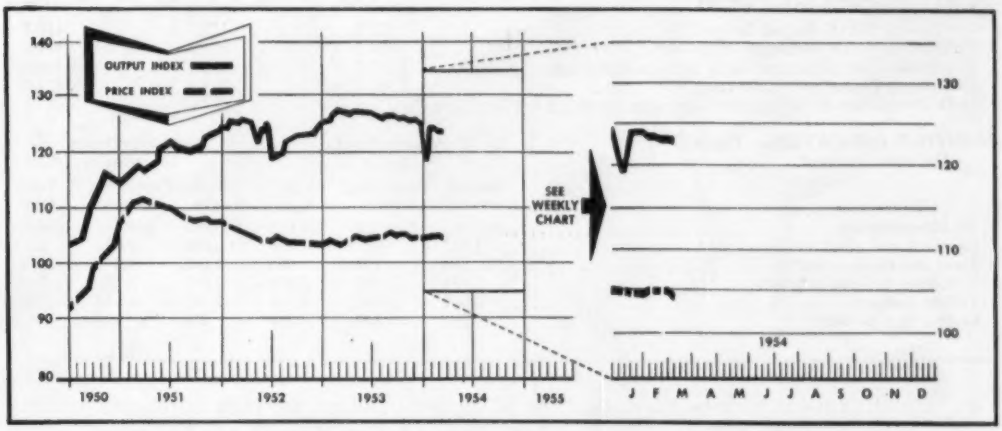
Paper Note: Burtonite #7, a new paper mill beater additive made by Burtonite Co. (Nutley, N.J.), is claimed to reduce beater time up to 50%, tensile to 32%, machine time to 10%. It is also said to give paper higher porosity, opacity, tear and fold properties. A gum from guar seeds, it sells for 36¢/lb.

•

For Poison Ivy: Zotox Pharmacal Co. (Stamford, Conn.) has introduced a poison ivy ointment known as Zotox. A zirconium preparation, it is said to prevent ivy poisoning in most cases when applied within an hour after contact. The product is hypo-allergenic, non-toxic, greaseless, and odorless. It sells for $1.98 in a 2¼ oz. tube.

Nonspillable

A PLASTIC CUP with a lid that prevents spilling—on a plane, train, or boat, for instance—has just come on the market. Called the Kramer Kup, it has a slot ½-in. below the lip into which is fitted an adjustable lid. The lid may be inserted until only a ¼-in. opening remains to permit flow of liquid to the drinker's lips. Maker: Seder Plastics Corp. (Fort Collins, Colo.)



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

One cogent comment concerning ethyl alcohol prices—"now it's official"—points up the intense market appraising that's been going on during the past few weeks. Culmination of the look-see, of course, was last week's not-surprising 3¢/gal. cut in manufacturers' schedules.

Fact is, under-the-market price shading and other concessions in many areas, underscored indications that contract customers were due for a price break (CW Market Letter, Mar. 6).

The new tags, posted early in the week by one maker, were quickly emulated by other producers who had been poised for a follow-any-leader move. Here's what users will be paying for some grades: Pure, tax-free material (tanks), 40¢/gal.; proprietary solvent, 43¢; S.D. No. 1, 42½¢/gal.

•

Almost simultaneously with the ethanol action was the 2½¢-3¢/gal. slashing of isopropyl alcohol schedules. Enjay broke the ice with the more realistic 35¢/gal. price (91%, tanks), but by week's-end all consumers had the same offerings. Tags for other grades now read: for 95%, 37¢/gal.; 99%, a 3¢-lower 39¢/gal.

•

Though it may not happen, some observers, in the light of the isopropanol reductions, consider it a fair possibility that acetone prices may also be in for a slight nudge downward. It's no secret that supplies are somewhat more than adequate to satisfy all inquiries, and the goodly slug from new phenol facilities adds to the market easing.

At the moment, acetone is pegged at the 8½¢/lb.-level, despite the current not-too-brisk demand.

•

Speculation about lower prices, however, is gone from the rare metals market arena. Last week, two—palladium and platinum—came in for some substantial reductions. Palladium, which has been quoted at about $23/oz. for the past twenty years or so, was trimmed to $21/oz.;

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	123.3	123.3	126.7
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.3	104.6	103.9
Bituminous Coal Production (daily average, 1,000 tons)	1,157.0	1,043.0	1,430.0
Steel Ingot Production (1,000 tons)	1,585.0 (est.)	1,613.0 (act.)	2,324.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	273.2	272.7	261.3

MONTHLY INDICATORS—Trade (Million Dollars)	Manufacturers' Sales			Manufacturers' Inventories		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
All Manufacturing	$25,705	$24,126	$24,507	$46,412	$46,722	$44,330
Chemical and allied products	1,532	1,601	1,606	3,092	3,093	2,900
Paper and allied products	686	701	695	1,046	1,044	1,060
Petroleum and coal products	2,023	2,186	2,018	2,641	2,725	2,584
Textile products	1,009	1,040	1,116	2,477	2,513	2,584
Leather and products	261	267	269	576	582	532

platinum can now be purchased for $6/oz. less; $84/oz. for bulk purchases.

Both cuts are being made by Baker & Co., Newark (N.J.), rated the country's top refiner and seller. Behind the reductions: supply outstripping demand in the case of the former; competition from lower priced platinum from South Africa, other countries.

•

It's just the other way around—demand leading supply—with some ag chemicals. Take triple superphosphate, for instance. Though the material hasn't been too freely available of late, observers are now pinning a "tight" label on current conditions. Reason: seasonal rush on mixers, with pressure backfiring on producers.

But there's a market-easing output step-up in sight—some soon, more later this year. Davison Chemical's new 200,000 tons/year installation at Bartow (Fla.) is already trickling shipments, with full-scale production due in a couple or three weeks.

And two other Florida producers, Swift and Armour, are both getting ready for a capacity-doubling. The former, reportedly, will be capable of turning out about 150,000 tons/year; the latter some 80,000 tons. These, and other expansions, are expected to hike total U.S. triple super potential to about 1.6 million tons/year, may well forestall any similar-to-now market-tightening next year.

•

There'll be no government dumping on the market of "strategic" items now piling up. That sums up the Office of Defense Mobilization's new policy of "freezing" government-owned stocks that are surplus to defense and civilian needs and to the national stockpile.

The move, though not expected to cure all ills of some hard-pressed producers (lead, zinc, among others), does remove the headache of possible government-included price depressing.

•

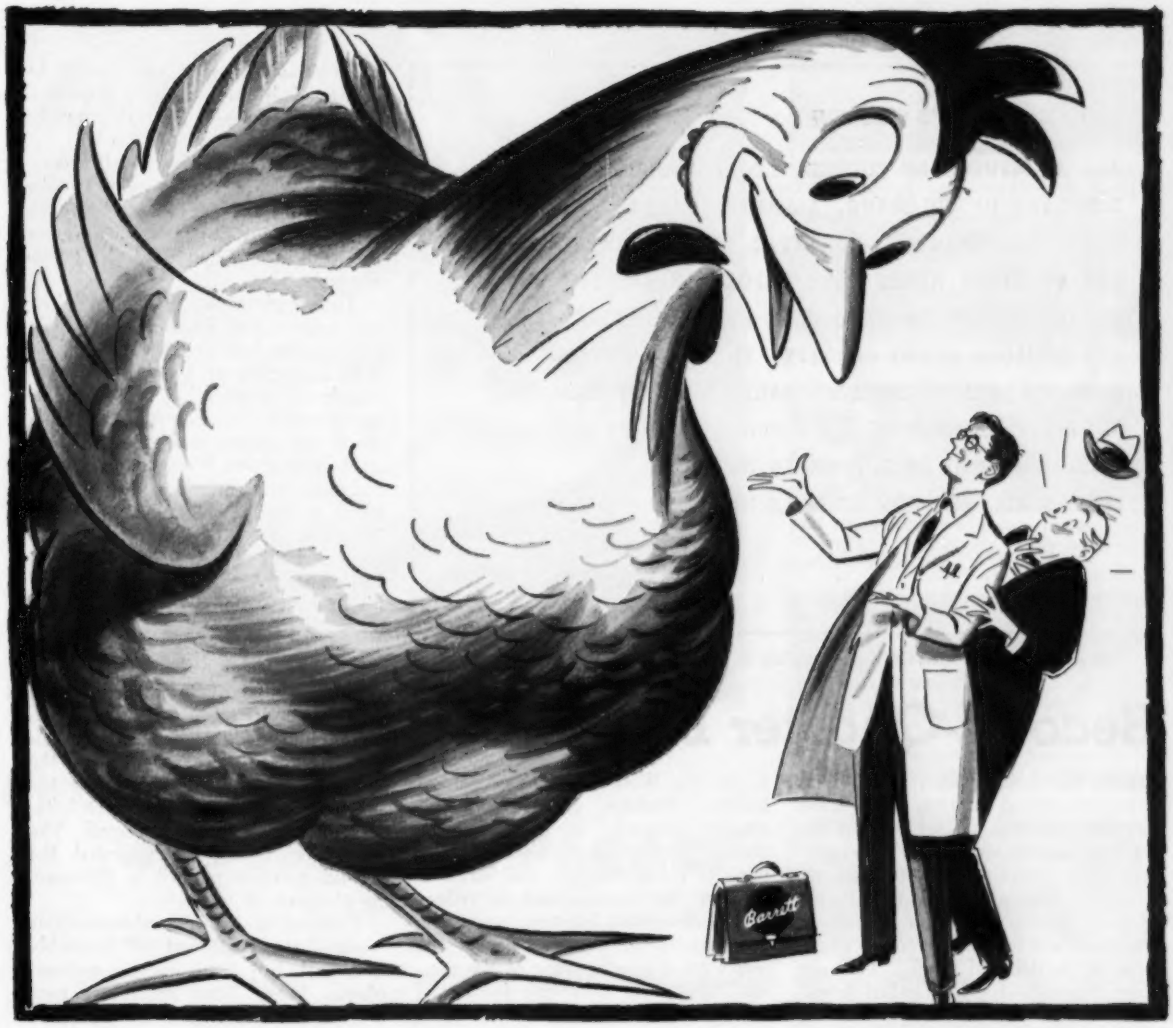
Add this item to the future epoxy resin burgeoning: last week's completion of a licensing agreement between Devoe & Raynolds and Bakelite. The move is another step in Bakelite's stride toward a still-not officially announced 6 million lbs./year production level.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending March 22, 1954

DOWN

	Change	New Price		Change	New Price
Ethyl alcohol, tax free, tanks, dlvd., E. of Rockies, gal.	$ .03	$ .40	dlvd. gal.	.025	.480
Isopropyl alcohol, 91pcs, dms., c.l.,			Platinum, metal, works, small lots, oz.	6.00	87.00
			Tallow, inedible, extra, tanks, dlvd.	.00125	.07375

All prices per pound unless quantity is stated.



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Most of the credit for this amazing production record goes to the scientists of the feed concentrate companies and agricultural experiment stations. Working with vitamin-enriched materials, they compounded chicken feeds which produce marketable broilers faster. Result: many more broilers can be raised and sold in less time and at lower cost.

One of the most important ingredients in the new feed concentrates is Barrett Niacin. The food industry is but one of scores which depends upon "Doc Barrett's" help in the development of more and better end products through the use of coal-tar chemicals. It will pay you to know more about "Doc Barrett." He can assure you uniform quality, steady supply and quick delivery. Your inquiries are invited.

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ADD, CW MARKETS ROUNDUP:

ALL ANONYMOUS OF COURSE. LOCAL PRODUCERS REPORT SUPPLIES OF CHLORINE, ALKALIS (CAUSTIC, SODA ASH, ETC), SULFURIC AND MURIATIC ACIDS R AMPLE--NOTHING REALLY TIGHT HERE. SOME PRICES HV BEN CUT BUT NO SERIOUS PRICE STRUGGLES EVIDENT. SOME OTHER CONCESSIONS GOING ON (I.E. FRT. ABSORPTION). OVER-ALL HEAVY CHEMICAL SALES R ABOUT SAME OR SLIGHTLY BELOW YEAR AGO. CONSENSUS: PICKUP 1954 WILL COME END OF 2ND OR IN 3RD QTR. THAT'S ALL FOR NOW IF MORE WL TT.

BYRNES
CHICAGO OFFICE

ALL SECTIONS REPORT the ensuing weeks' activity may well be a . . .

Second-Quarter Bellwether

On the threshold of what may well be a crucial second quarter, CW's latest periodic roundup on the state of the nation's markets serves only to crystallize some widespread beliefs among chemical company executives, purchasing agents, and sales managers: there are still a few chemicals caught in a supply-demand pinch. There are some items which can be called downright loose; but on the whole the majority of the chemical commodities —in contrast to the Korean period of shortages—have finally moved into the in-balance column.

Here's the picture, area by area, across the country:

West Coast

The Far West looks at chemical markets from different hilltops than does the East.

- The top ten customers of a typical producer in the Far West don't account for the big chunk of sales that an Eastern producer's top ten do. Consequently, sales do not fluctuate so widely there as they sometimes do in the East.
- Fixed distribution costs represent a much higher proportion of the final price than they used to—a fact particularly true in the West, and even more true for a company that manufactures in the East and sells in the West. High freight costs have shouldered out most Eastern "dumping" on Western markets.
- The shortage of technical help in the Far West has changed buying habits: "Perhaps chemists in the smaller companies are too busy to sit down and reformulate formulas on the basis of price changes. This tends to stabilize the market and to reduce price differentials between competing products—no use cutting prices if you won't get a greater share of the market." That's one marketer's analysis of the West's relatively fewer price gyrations.

Right now sales of agricultural chemicals and paint sales are exceptionally good west of the Rockies.

The growth potential for chemical fertilizers along the Pacific slope is tremendous.

Some Eastern companies that used to dump chemical fertilizers in the Western states are now planning to put in money and plants. The good prospects for 1954 may bloat capacity, result in some years of rough competition.

With more than enough phenol now being produced on the Coast, some purchasing agents look for a market break. One of the producers using the cumene hydroperoxide process may pour out enough acetone to contribute to still another market glut.

Alcohols, esters, ketones, and glycols are in good supply, and there's a slight brightening in view. Reason: Customer inventories are down. Underscoring the low-stock holding policy currently in vogue is one company's flat fiat that any inventory greater than 20 days' supply must be approved by the division manager, and anything over 45 days' must be approved by the home office.

Since more Western paint companies are switching to new formulations tested and adopted in the East, sales of resins for paints will move ahead more rapidly on the Coast than elsewhere.

The supply picture in the Far Western states is good for heavy chemicals, phosphates, insecticides, and sulfuric acid, among others. Until recently, the supply of ammonia has been tight; of trichloracetic acid, spotty. Particularly ample are ethanol and methanol.

More than one Western company is reducing its inventories; one large firm plans a 50% reduction. This much is certain: no one seems at all concerned about any near-term shortages in the Far West. And that's also true about most areas.

The Southwest

Last year was dry in the Southwest. Repercussions: the use of both herbicides and insecticides declined. This year promises to be even drier: the State Water Board of Texas reported in mid March that average precipitation was only 18% of normal. The area around Houston recorded the second smallest rainfall in February for the past 86 years.

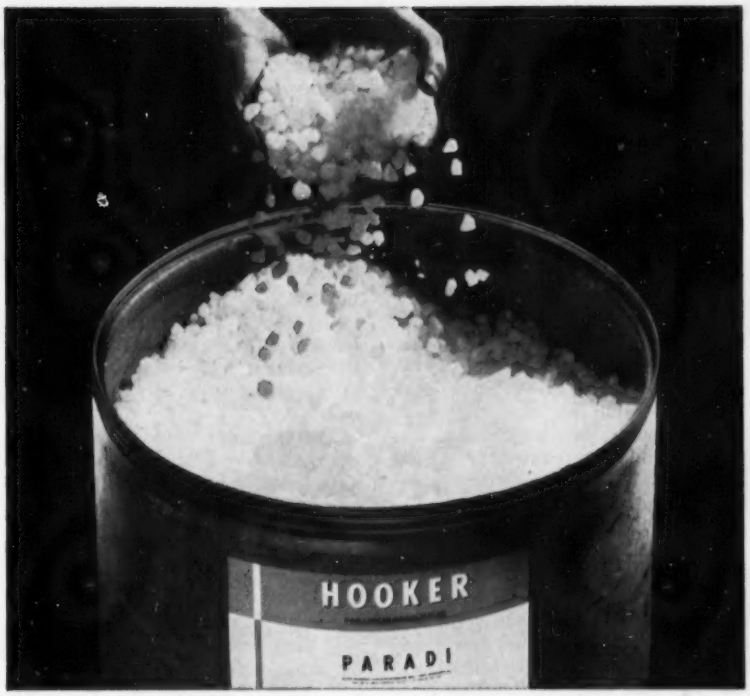
Farmers in the drought-conscious areas of the Southwest will probably be slow to buy BHC, lindane, or toxaphene. West Texas ordinarily uses a good deal of 2,4,5-T on mesquite, but may hold off further purchases unless there is rain.

Manufacturers have not taken the dimmest view: some BHC, lindane, and toxaphene plants have returned to production. A minor thorn: prices of imported lindane are below the domestic ones. But producers in the area can see better sales outside the parched areas.

Sales of 2,4-D in the sugar cane belt of southern Louisiana have been good, but are punctuated with price-chipping.

Chlorine demand in the Southwest has eased; production has been cut, in turn lopping off caustic soda output. There is a shortage of the latter in view. Resolution of the chlor-alkali depression may come from demands for chlorine by the producers of chlorinated insecticides. Then, too, more chlorine may go into the production of chlorinated waxes, particularly those being used as a fire-resisting impregnation of tent canvas or tarpaulin.

There is misery among the muriatic acid producers; there is simply too



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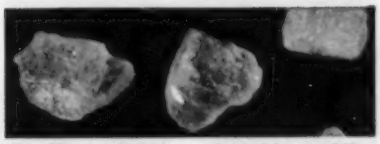
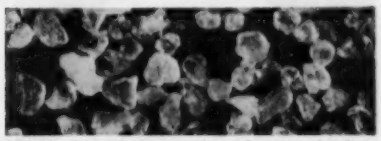
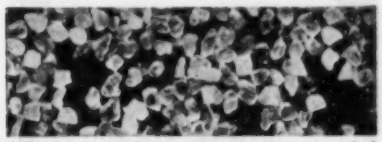


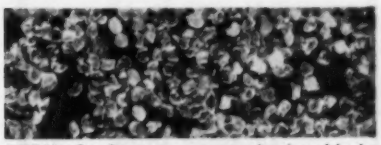
PEA No. 1—Repackage these big sparkling crystals, just as they come from the drum.



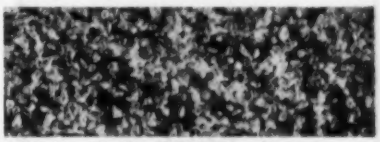
PEA No. 2—Another good size for repackaging.



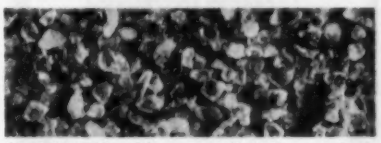
RICE No. 1—Smallest crystals recommended for straight repackaging. Many housewives prefer this finer size.



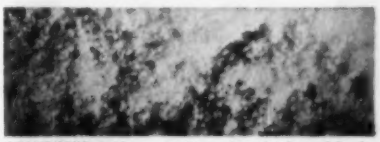
RICE No. 2—For power compressing into blocks and pellets. Exceptionally free-flowing for automatic presses where dies must be refilled rapidly.



RICE No. 3—For foot-operated presses you need a finer size like this, free-flowing but small enough to pack and compress easily.



GRANULATED—Often specified for agricultural use.



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much of the acid. Three developments have worsened the situation:

• The International Minerals & Chemical Corp. came onstream with muriatic at its Carlsbad (New Mex.) plant last October. Result: price competition in muriatic sharpened.

• There has been some changeover from acidizing oil wells to more fracturing and less use of muriatic acid.

• Anticipation of further decline in consumption of muriatic comes with the announcement that the Tin Processing Corp. plant, Texas City (Tex.), an agency of the RFC, may close down next June 30.

The chances are good for a surplus of anhydrous ammonia in the Southwest. But there should be takers in the Northern industrial states for any excess.

Salt cake has become tight because of increased consumption by the sulfate pulp mills of the area, reduced production of rayon cake by the viscose rayon producers, and fewer imports. Attention: producers of natural salt cake may take heed and up their output.

If Texas puts a tax on gas, it will be passed on by the carbon black people to the consumers. Furnace black sales have been in balance with supply; but channel black sales have been very slow.

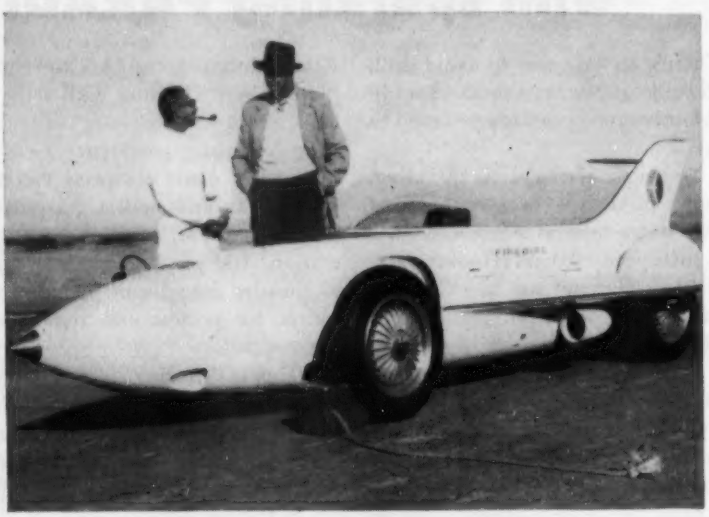
Midwest

The Midwestern market basket of the nation may expect a little slower year than 1953 in the use of insecticides. Yet demand for benzene hexachloride is expected to be heavy later this year. Sales of DDT are down; supplies are plenty.

Up to this date, one major fertilizer manufacturer finds sales a little under those of last year. He foresees serious price cutting—especially in the Southeast.

The muriatic market here, as in the Southwest, is shaky. Makers can't pare prices much more without getting hurt. It may be hard to get large quantities of sulfuric acid in some areas, but it will be easier than for several years to fill orders of the usual size.

Except for ammonia, one producer says that production of most of the other major heavy chemicals—sulfuric and muriatic acids, chlorine, caustic soda, and soda ash—are about 6% below last year's first quarter level. Decreased defense production — less activity in the steel mills—has re-



Turbine-Powered Plastic

UNDERLINING the continuing trend by the automotive industry of constructing resin-fiber glass "working samples" is General Motors' XP-21 Firebird, one of the company's even dozen "plasticars". The experimental vehicle—labeled a laboratory on wheels and not intended for highway use—is the first gas turbine-powered automobile built and tested in the U.S.

The Firebird's 35-gal. fuel tank is also made of fiber glass-reinforced plastic. Over-all weight of the car, including the Turbo-Power engine, is 2,500 lbs.

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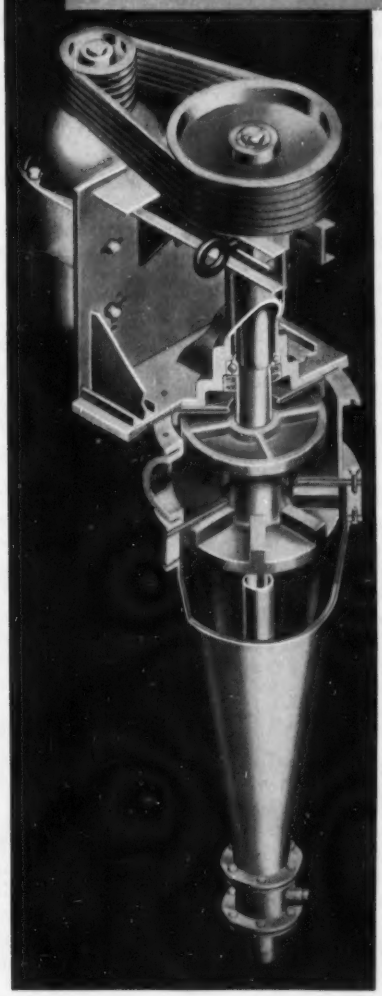

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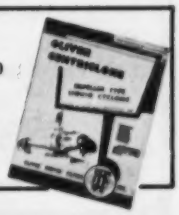
Send for our Bulletin No. 800 which fully describes the CENTRICLONE



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duced the demand for sulfuric acid in pickling. Too, inorganic pigment and other chemical compound manufacturing is calling for less sulfuric.

Other heavy chemical producers note similar small declines in consumption going into the second quarter, but expect 1954 totals to equal or perhaps surpass those of 1953.

Any over-all sales lag in heavy chemicals is largely attributed to decreased chlorine demand in line with decreased defense production. There's less consumption of chlorinated degreasers and solvents, such as carbon tetrachloride and trichlorethylene. A good many chlorinated specialties produced in the Midwest no longer appear promising and are being dropped.

Keen competition among U.S. producers of chlorinated solvents and degreasers is further sharpened by European imports at lower-than-domestic prices.

The tale-telling rumor summing up the chlorine market is this: Dow Chemical is offering chlorine for sale for the first time in its history.

Ammonia is not quite so plentiful, but no shortages are presently reported. Increasing production facilities are pushing the item nearer the ample supply mark. That's borne out by reports that ammonia from as far as Texas is arriving in Detroit at prices comparable to those of local producers.

With a lower demand for steel, some producers are using a longer coking cycle. Result: they will get less naphthalene but more acids and tars, will have to guard against increasing impurities in benzol, toluene, etc.

Right now there is almost a glut of benzol and light oils, but producers can probably dispose of their supplies before the year is out.

Vinyl resins are tabbed for a pick-up when garden hose production gets rolling. Alkyds are in good shape in the Midwest, but phenolics are off a bit—especially in insulation. Molding powder prices are down, but there's a chance that television cabinet builders will turn more and more to molding powders. Shell-molding compounds appear to be holding their own.

Synthetic resins that underpin the paint and varnish industry should pick up this spring as the construction industry enters its big season in the Midwest. But no resin shortages are foreseen.

Supplies of naval stores are abundant in the Central states. The only remotely tight items are pine oil and terpene alcohols.

Middle Atlantic

Chemical industry pessimism in the industrialized East seems to gravitate to the tariff situation. More than one leader in the industry takes exception when the Administration considers lower tariffs on chemicals the best way to encourage strong world trade. Private-enterprise arithmetic is simple: without tariffs we have no protection.

While marketers in the Southwest and the Far West profess little concern with activity of the Administration in Washington, Eastern producers are less reluctant to advance some ominous arguments: Says one: "We worry a little about imports of heavy chemicals, a lot about the impact of lowered tariffs on high-profit products."

Although naphthalene has been in full supply for several months, continued demand for it, together with reduced steel coking, will likely firm the market.

New England

The New England area chemical market is wide open, with practically everything in good supply. Real selling jobs are important again.

Only exceptions: nickel salts and nickel anodes. Taken off allocation last November, they are now in tight supply and getting tighter. Lithium salts are getting tight too.

The most serious jolt to New England chemical suppliers is the tobogganing of the textile and tanning industries.

Bright spots: the metal-working and electronic industries are in excellent shape. The paper industry is in fair to good condition. Both, of ccurse, are good chemical customers.

Some optimists opine that chemical prices in New England are holding firm and probably will stay up during the next quarter, if not for the next six months.

A prominent importer in Boston notes that hiked chemical prices in Western Europe have lessened a potential threat to American markets. Overseas producers are selling in their own backyard, not shipping here for the usual premiums.

Synthetic rubber sellers, as those in most other allied chemical industries, are pushing hard to get customers to take larger quantities.

All in all, the reports from CW editors and correspondents in every section of the country indicate that 1954 may not wind up as the banner year in chemical activity. The second quarter may well be the turning point leading to somewhat brighter prospects in the second half of the year.

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Resin Grade Phenol—Ortho Cresol mixtures to meet commercial requirements. Used principally for the manufacture of phenolformaldehyde resins and as a selective solvent in the refining of lubricating oils.

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ORTHO CRESOL

Used for the manufacture of ortho-cresotinic acid (dye intermediate), disinfectants, synthetic tanning agents and insecticides. It is used in resin grade phenols to control the quality of the resin.

Which of these TAR ACIDS do you need?

USS

META PARA Cresol

Used in disinfectants, resins and as an organic intermediate.

All of these are produced by UNITED STATES STEEL

USS

CRESYLIC ACIDS

(Resin Grades, Tricresylphosphate Grades and Flotation Grades) are mixtures of Cresols and close cut fractions of higher boiling tar acids, produced to meet commercial requirements. They are used principally for the manufacture of phenolic type resins, plasticizers and as flotation agents.

USS

SPECIAL GRADE CRESOLS

Mixtures of Phenol, Cresols and other close cut fractions to meet commercial requirements. Used principally for the manufacture of special purpose phenolic type resins and varnish. They are also used for the manufacture of synthetic adhesives, disinfectants and insecticides, dyes, intermediates, inhibitors of gum formation and photographic chemicals.

For more information about these Tar Acids and the complete line of USS Coal Chemicals, just contact our nearest Coal Chemical Sales Office, or write United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

USS Coal Chemicals

USS

4-299

UNITED STATES STEEL

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like magic

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- Ammonium Fluoborate
- Antimony Trifluoride Sublimed
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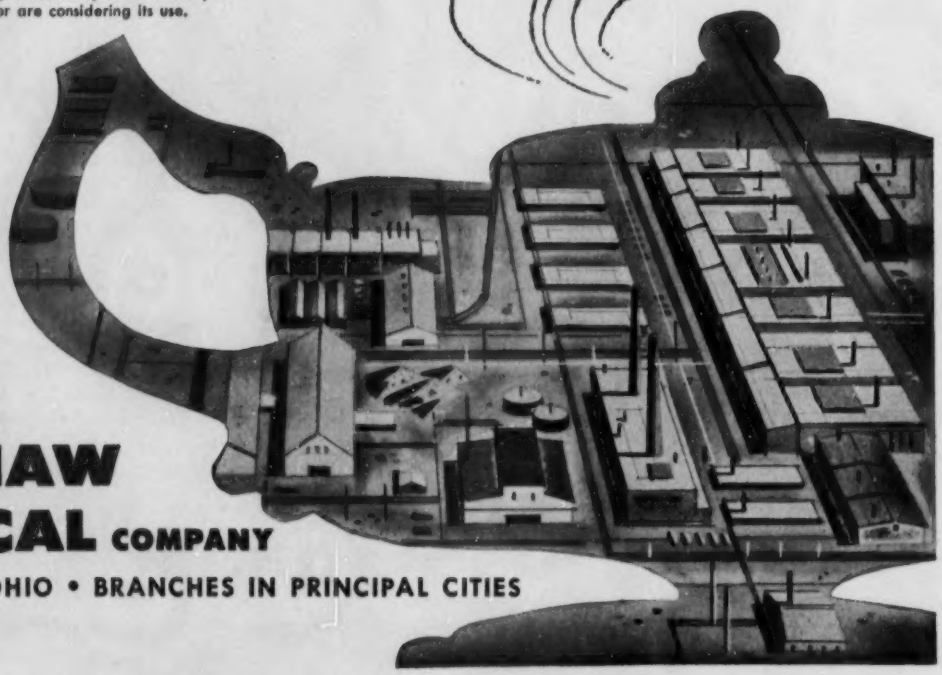
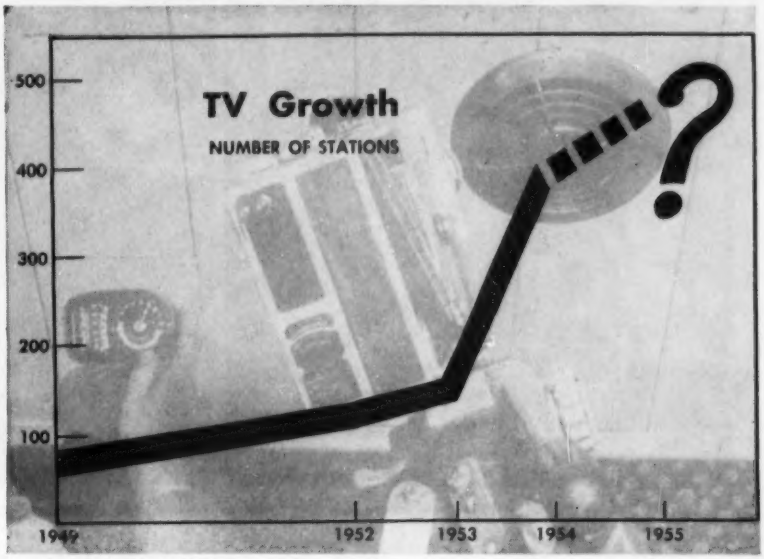
- Bismuth Fluoride
- Boron Trifluoride
- Boron Trifluoride Complexes
- Chromium Fluoride
- Copper Fluoborate
- Fluorboric Acid
- Fluorine Cells
- Fluorinating Agents
- Frosting Mixtures
- Hydrofluoric Acid Anhydrous
- Hydrofluoric Acid Aqueous
- Hydrofluosilicic Acid
- Lead Fluoborate
- Metallic Fluoborates
- Potassium Bifluoride
- Potassium Chromium Fluoride
- Potassium Fluoborate
- Potassium Fluoride
- Potassium Titanium Fluoride
- Silico Fluorides
- Sodium Fluoborate
- Tin Fluoborate
- Zinc Fluoborate
- Zinc Fluoride

Write for Harshaw's 40-page Book on Hydrofluoric Acid Anhydrous. It provides helpful data for you if you now use HF or are considering its use.



THE HARSHAW CHEMICAL COMPANY

CLEVELAND 6, OHIO • BRANCHES IN PRINCIPAL CITIES



PROGRAM HUNGRY: As TV booms, the chemical industry finds movies are . . .

Better than Ever

Ever ready to jump on any bandwagon that promises to lead—directly or indirectly—to sales results, more and more merchandisers have been eyeing that enticing but tricky vehicle, television. And chemical makers, their industry and end-products bidding more and more for public awareness, have been quick to experiment with one of the most subtle of sales media, the commercial documentary TV film. One of the current film releases is a 16-mm. color motion picture produced by Air Reduction Sales Co. Titled "Whatever We Do," it's a basic documentary film about atmospheric gases, their key uses in industry, the ways in which they touch the daily lives of the public.

"Whatever We Do" is not a technical film. True, it deals with a technical subject—the manufacturing process and distribution system involved in the marketing of gases. But its message is beamed at strictly nontechnical audiences—employee group meetings, management development sessions, clubs, schools—and televiewers.

Airco is, of course, not alone among chemical makers in attempting the subtle sell of the documentary. Some other examples:

- Du Pont's "Du Pont Story";
- Bakelite's "Flight to the Future," a glimpse into the future for plastics;
- Monsanto's new "Kitcheneering," first of a series illustrating the proper roles that plastics play in homes.

Only the Beginning: There seems to be little doubt of what's in store for the TV documentary: all signs point to more of them. Why:

- Major networks are estimated to have tripled their use of films in the past year. One obvious cause: live shows are staggeringly expensive.
- TV's voracious appetite has led some film distributors to edit and circulate industrial films—the type originally produced for public relations purposes—for school and club audiences. But these old promotion films won't satisfy the TV audience for long.
- The number of small, local stations has literally shot up (*see graph*) since new station "unfreezing." These newer stations' program material needs are much higher than the older, established telecasters'.

What's In It? Companies with products to sell or good will to buy find a line of lures leading them to extend their efforts in TV documentaries.

A smart merchandiser might be considering these possibilities:

- With the obligation to sell some products all the way down the line to the ultimate consumer, a persuasive TV presentation can prove to a company's immediate customers that it's doing a job of selling for them—not merely rendering lip service about the value of its products.
- A TV broadside might increase company prestige in the public eye, perhaps even all out of proportion to the effort required. For instance, Monsanto, with a huge stake in the plastics industry, is now beaming its films in a continuing campaign for "proper plastics properly applied." Such goodwill bids, the company is confident, should scarcely fail to elicit favorable response.
- Figured on a cost-per-capita basis, the TV documentary might well be a likely medium to convey certain promotion themes. One company discloses that before its film has outlived its use, it will have cost less than

AIRCO HUDDLE*: The Sales Dept. puts in a word.

* Harvey Plants, supervisor of audio-visual activities; Elliott Pettigrew, manager gas sales; John Martin, film director, and Horace Henriques, sales vice-president, Air Reduction Sales Co. thresh out "shooting script."

HIGH GRADE MURIATE OF POTASH

DUVAL

Sulphur and Potash Company

•

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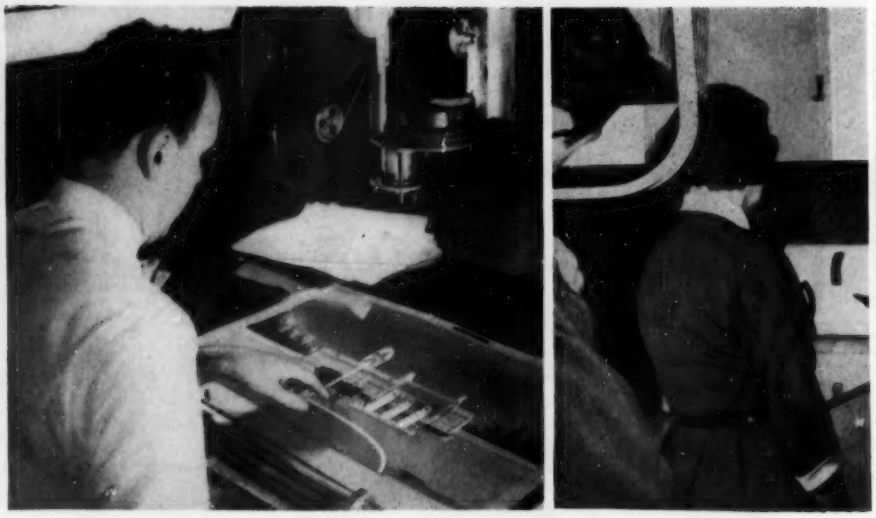


'WHATEVER WE DO': Animation sequences, studio production shots, on-the-scene

1¢/person receiving its message—a mighty satisfactory rate.

Ifs and Buts: Naturally, so inviting a promotional medium is ringed with certain hurdles. These may take several forms. For instance:

• It would be a daring if not foolhardy advertiser, indeed, who would place all its chips on selling by this subtle, indirect route. As an actual case, Airco's "Whatever We Do" represents only a minor cut (less than 8%) of its total advertising budget. At that ratio, the number of companies able to afford a documentary film is definitely limited.

• The TV film, unlike spot commercials, must be pitched in a low key, with its sales song soft-pedaled. Otherwise, it won't qualify for federal "public service" requirements. Even program-hungry station managers, hard put though they might be to fill in their broadcasting time, won't touch a too thinly disguised commercial. Ideally, a sponsored film must show a sense of restraint, convey an air of responsibility, be credible.

• To be adaptable for television use, the film should preferably fulfill certain mechanical requirements. Chief of these is length. For a quarter-hour presentation, a 12½-minute run fits in nicely, leaving time for announcements and station identification. For a half-hour program, film time, according to the studio managers, should approximate 27 minutes.

Another desirable film characteristic, say those who are peering a bit ahead, is that it should be in color. A large portion of those now being made fulfill this requirement.

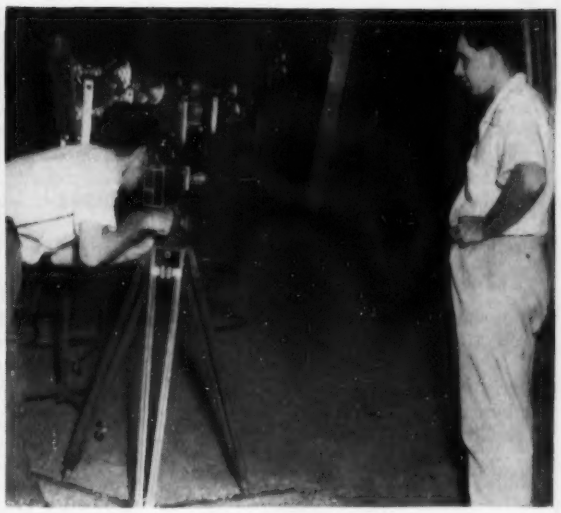
What They Decided: Encouraged by the promotion possibilities, hedged by these limitations, this is how Airco worked up its "Whatever We Do":

Like many of its predecessors, Airco's salesman-on-film is intended to glamorize the company's product line, tell the Airco story in easy-to-take doses.

Airco's decision to produce "Whatever We Do" actually dates back to 1951. At that time, Harvey Plants, who heads Air Reduction's audio-visual group, was handed the problem of turning out a basic company movie —one that would relate the complete story of Air Reduction Sales Co.

Certain at a glance that the subject was far too broad for any single movie, Plants, huddling with Airco sales and promotion staff, came to the

9,000 FT. OF FILM: Cutting trimmed



subjects all are produced simultaneously, added up to more than . . .

decision that the best answer would be a series of documentaries, each covering one company division.

Plans to Pix: His subject ultimately narrowed to the Airco Div., Plants issued a long series of memorandums, suggested ideas that might be incorporated into the finished film. Weeks of conferences and stacks of suggestions followed. Eventually Plants whittled the material into an outline that circulated among Airco executives, and was finally approved.

After an extended delay due to more pressing assignments, the documentary work was resumed early last year. Plants, picking up where he left off, moved ahead about like this:

• Following the usual production pattern, he estimated the cost. Limiting factor: with his audio-visual group granted less than 10% of the total advertising budget, and several slide films to be produced as well, Plants set his documentary cost at $15,000.

• Engaging outside producer and director John Martin, the film group worked up a script. Since television presentation was one definite target, two physical requirements were kept in mind: (1) running time, 23 to 25 minutes (2) 16-mm. color film.

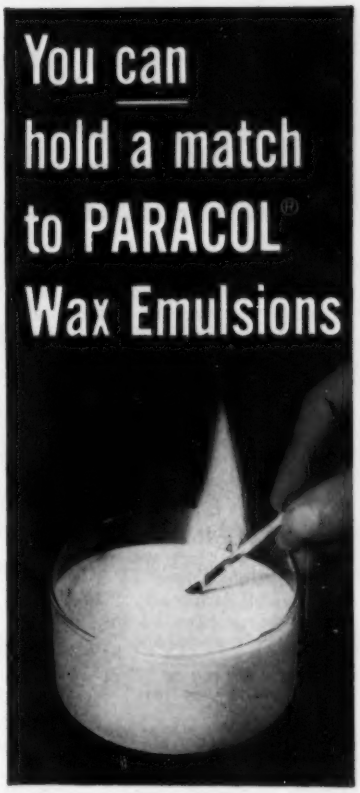
• Preliminary script in hand, Plants once again went into conference with top management. After several group meetings, and several rewrites, Plants was ready to "shoot."

• Martin handled most of the inside "studio" scenes, Plants and his camera crew took most of the outside "on-the-spot" shots. In addition, the script called for animation; these scenes were scheduled and contracted for by Martin.

• Four months and 9,000 ft. of film later, shooting was complete. Included in the total footage were shots borrowed from other firms, through Industrial Audio-Visual Assn. Material ranged from the U.S.S. *America* steaming into New York harbor to coffee steaming in a suburban kitchen; from welders in a Midwest plant to fashion models in the latest creations.

• Then, because the film on hand was 10 times the eventual 900 ft. required, the task of cutting to size began. (This ratio of footage shot to final length is not unusual.) Indicative of the work involved: a 42-second mosaic of neon signs cost Martin and the hired professional film cutter 4½ days' labor.

9 months' work to 900 ft. and 23 minutes.



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DISTRIBUTION

• With the film pared down to the essential 900 ft., Martin proceeded to integrate the sound track. Purchasing "canned" background music (a legitimate dollar-saving device), he hired NBC newscaster-moderator John McCaffery for the narration.

At last, after nine months' work, the finished production was ready for its initial showing. Final cost to Airco for its low-pressure gas production: close to $20,000.

•

For the Bookshelf: Among the current offerings:

• Sharples Chemicals Inc. (Philadelphia): a booklet describing the physical properties of the company's various products.

• Refined Products Corp. (Lyndhurst, N.J.): a booklet on its Perma Kleer sequestering agents.

• Armour & Co. (Chicago): a 24-page booklet, "Ethofats, Ethomids, Ethomeens."

• American Mineral Spirits Co. (Chicago): a buyer's guide to petroleum solvents and their properties.

• Chemo Puro Manufacturing Corp. (Long Island City, N.Y.): a technical data sheet on betaine hydrochloride.

• National Starch Products (New York) has issued a 56-page booklet "The Story of Starches."

•

Ohio Barges: Allied Chemical & Dye Corp. plans construction of a barge-loading dock at Moundsville, W. Va., to service its Solvay and National Aniline Div. plants.

•

Symposium: The Midwest Research Institute will sponsor "Operations Research in Business and Industry" April 8-9, in Kansas City, Mo. The two-day session at the Hotel President will close with a panel discussion and summary of the 11 specialized presentations composing the symposium program.

•

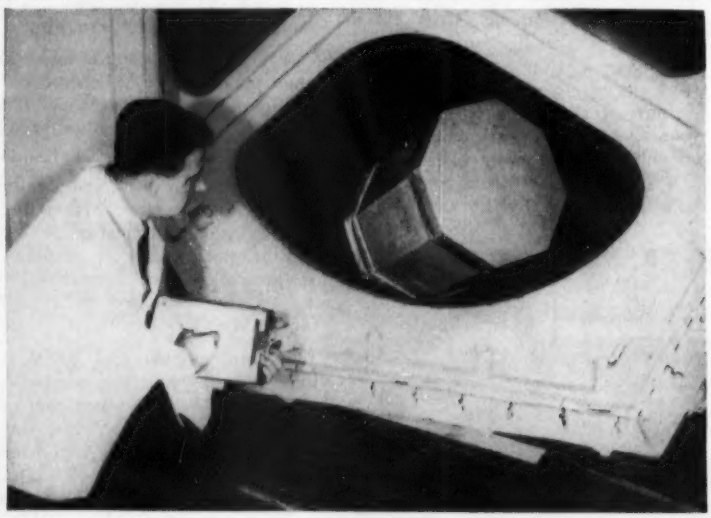
Vinyl Stabilizer: Carbide and Carbon Chemicals Co. offers commercial quantities of dibutyl tin dilaurate.

•

Building Expansions: Now under consideration:

• Visking Corp. (Chicago): a $1-million polyethylene film extrusion plant near Flemington, N.J.

• Arner Co., Inc. (Buffalo): a new plant site on Swan St. to integrate operations.



Tumbling Tests Tightness

THE NEW SIFTPROOF version of the Drumpak heavy-duty container undergoes tests at the Gaylord Container Corp.'s research and development laboratories. The drum-tester device subjects the experimental container to repeated tumblings and predetermines its ability to prevent sifting out of powdered starch, which was used in the test.

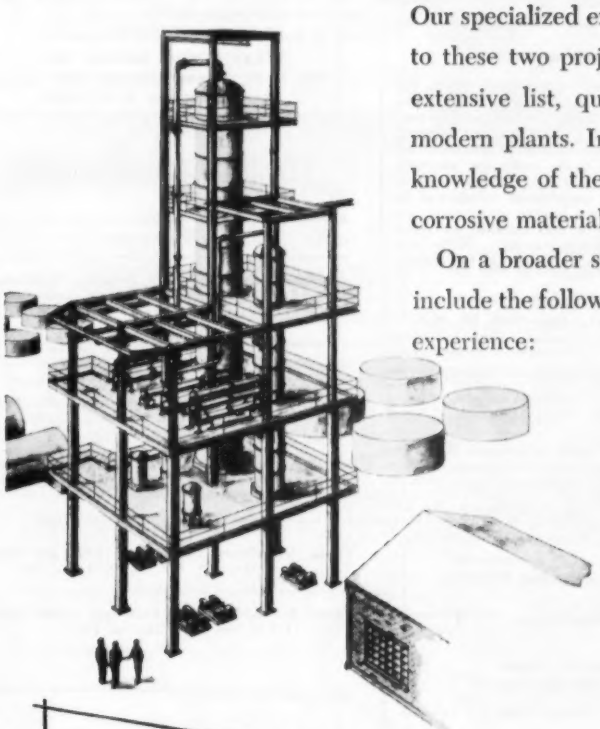
Gaylord will introduce the new siftproof fibre container at the American Management Assn. packaging show next week in Atlantic City.

2 Current Projects of Interest

- **Catalytic Polymerization**
- **Secondary Butyl Alcohol Synthesis**

Our specialized experience with the chemical problems peculiar to these two projects, which have been selected from a rather extensive list, qualified us to design and construct these two modern plants. In particular, these processes require a special knowledge of the chemical reactions involved, the handling of corrosive materials and product separation.

On a broader scale our engineering and construction services include the following, in each of which we have had considerable experience:



Organic Chemical Synthesis

Inorganic Chemical Processing

Catalytic Operations

Solvent Purification

Separation and Refining of Organic Chemical Mixtures by conventional, azeotropic and extractive distillation, liquid-liquid extraction, crystallization

Petroleum Processing:
- **Topping and Vacuum Distillation**
- **Lube Oil Units**

Coal Tar Distillation

Gas and Vapor Recovery

Pharmaceuticals

If you have any plans involving a new plant or unit, expansion or modernization, we shall be glad to discuss them and outline our methods of procedure.

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Design and Construction of Process Plants

•

Design and Construction of Process Units

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Process Evaluations

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Economic Studies

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EMPLOYMENT

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Midwest Chemical Mfr. seeks change.
25 yrs. experience direct & mail order.
Personnel training, statistics, forecasts, product & market development. $15,000-$25,000.
PW 2159 Chemical Week
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AVAILABLE

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Chemical engineer with post graduate studies. Age 35. 13 years' experience with a major pharmaceutical company as technical and administrative executive in all phases of manufacturing, packaging, quality and production control in antibiotics, parenterals, tablets, liquids, creams and ointments. Excellent record in cost and inventory reduction. Experience includes reorganization, initiation of operations, selection and training of personnel, and formation of policy in both domestic and export fields. Desires change to challenging position with growing and progressive company in the pharmaceutical or related field.
PW1541 Chemical Week
330 W. 42 St., New York 36, N.Y.

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Tanks, S/S—30 gal. to 8000 gal. Perry Equip. Corp., 1415 N. 6th St., Phila. 22, Pa.

SALES OPPORTUNITIES

If you are a manufacturer seeking new or added sales outlets—or if you are a manufacturer's agent or chemicals distributor with the capacity, time and energy to take on additional lines—make your interests known in this column of CHEMICAL WEEK. The right agent or jobber teamed up with the saleswise manufacturer makes the right combination for the hard selling days ahead. There's profit for both, which can be initiated through low-cost classified advertising. Write TRACERS Dept., Chemical Week, 330 W. 42nd St., N.Y. 36, N.Y.

process industries

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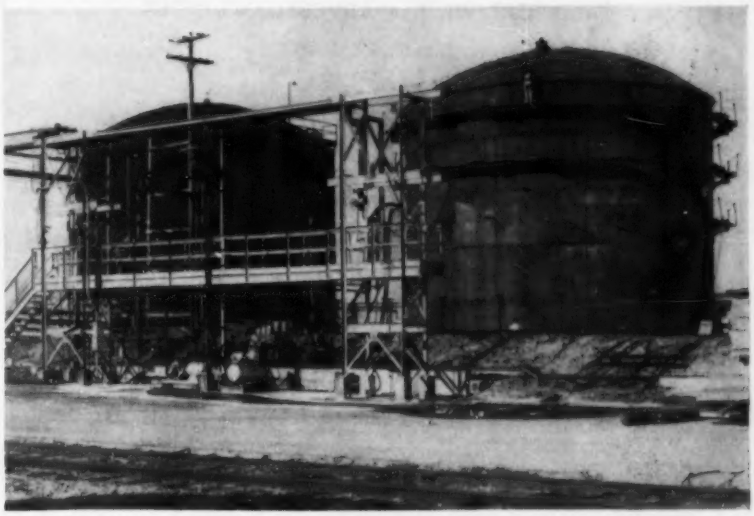


CHARLESTON STORAGE: A new 73% caustic tank to serve the Southeast as Dow ships . . .

Caustic By Sea

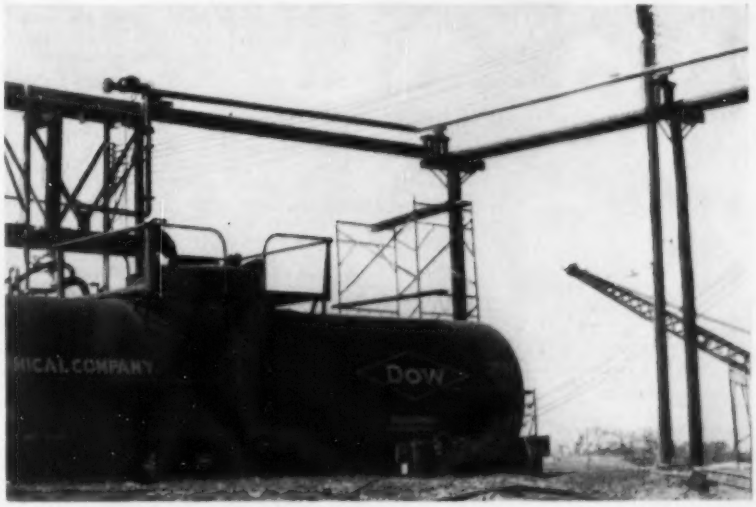
Jockeying for position in the caustic soda distribution race, Dow Chemical is expanding its 73% caustic storage capacity, plans to tie in Charleston storage facilities with tanker shipments from Freeport, Tex.

With an eye on the burgeoning Southeastern industrial market, Dow this week detailed liquid caustic discharge and distribution plans for the port of Charleston, S.C. Keynoting the Charleston expansion, scheduled to go into operation this spring, is an almost completed 635,000-gal. storage tank for 73% liquid caustic soda.

The new tank is being built by the South Carolina State Ports Authority adjacent to a similar-size 50% caustic tank at the authority's North Charleston terminals on the Cooper River. It will double Dow's present caustic storage and distribution capacity for the Southeast.

Nickel-lined, with a 2-in. 85% magnesia insulation, the new tank will be kept at 220 F by an automatically regulated double boiler and special nickel heating coils. A nickel pipeline will discharge directly into tank cars at the terminal's rail siding.

Tanker Link: Cognizant of the cost-saving potential of bulk ocean transport, Dow will use two specially constructed chemical tankers to move caustic from Freeport to Southeastern markets. A leased converted



TANK CAR LOADING: Solid nickel loading lines move caustic from storage.

CHEMICAL WEEK • ADVERTISING INDEX

March 27, 1954

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Kentucky Insurance

Before obtaining permits to operate, Kentucky trucks are required to file with the State Dept. of Motor Transportation their policies of insurance covering public liability and property damage.

This week, Kentucky truckers are eyeing a bill that has been introduced in the state legislature to double present public liability insurance and increase five times the amount of property damage insurance required.

The measure would also create a new classification for trucks carrying inflammables and explosives. Minimum coverage in this special category: $10,000 for death or injury to one—$25,000 for death or injury to more than one person in the same accident, and $25,000 property damage.

Plastics Exposition

Leading manufacturers who use plastics in their products will explain how and why at the Technical Conference that will run concurrently with the 1954 National Plastics Exposition sponsored by the Society of the Plastics Industry, Inc., to be held June 7-10 at Cleveland's Public Auditorium.

Some 150 exhibitors will display products related to the following four industries: radio and television set makers, the rubber (elastomers) industry, refrigeration and air conditioning manufacturers, and automobile producers.

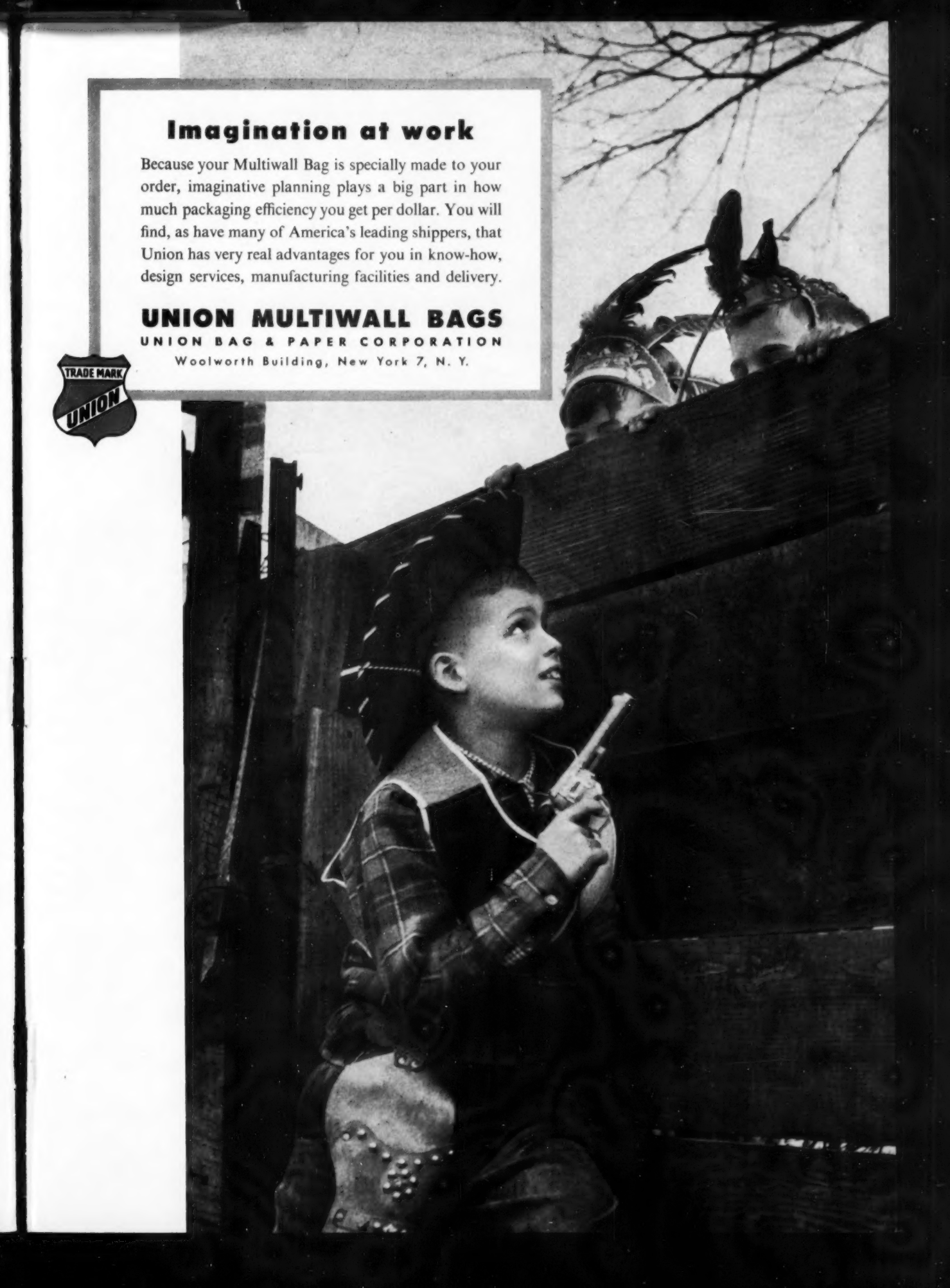
•

Sales Agents: Universal Detergents has appointed Thompson-Hayward Chemical Co. as Midwestern distributor of Udet F surfactants.

•

Highlighting the program of the American Management Assn.'s annual packaging conference April 5-7 in Convention Hall, Atlantic City, three major companies will present complete case-study reports on industry packaging problems:

Sears, Roebuck & Co. will tell how the sell is put into its retail packages; Kraft Foods will describe its packaging research program; and Monsanto Chemical Co. will outline its entire packaging operation.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